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JANUARY, 1920

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MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association

VOL. III JANUARY, 1920 No. 1

ORIGINAL ARTICLES

THE MEASURE OF MENTALITY*

ARTHUR SWEENEY, M. D.
St. Paul, Minn.

The revelations of the psychological tests of the army are surprising and bewildering. It is somewhat of a shock to realize that the average of human intelligence in this country is that of a child of about twelve years of age. We have been accustomed to boast of the high grade of our citizenship, of the intelligence of the American workman, of the superior type of our rural manhood, and of the easy adaptability of the city dweller to the requirements of our modern civilization. We have taken no little pride in the fact that the little red schoolhouse has educated our youth to a degree surpassing that attained in the older countries, and that our free institutions have produced a type of manhood superior to that of other less favorably nurtured peoples. It is, therefore, a startling statement that the psychological tests, applied to a group of stalwart men, men between the ages of twenty-one and thirty-one, shows them to be intellectually juvenile rather than adult. These tests applied to over a million and a half recruits, coming from all parts of the country, representing all grades of society, all conditions of life, whether rural or urban, educated or illiterate, rich or poor, provide a fair basis on which to estimate the general intelligence of our citizens. Everyone within the limits of the draft ages was subjected to the tests. The recruits examined represented a cross section of the manhood of this country, after the draft boards had eliminated those who were physically unfit for service. Those who were sick, crippled, manifestly imbecile, insane, criminal or socially inadequate, have been excluded from the tests. It may, therefore, be said that the group examined was composed of the more than average citizen, and was representative of more or less selected physical and mental excellence.

Heretofore our conceptions of human intelligence have been based upon a general opinion that some few of our people are idiots, imbeciles or insane, and that the rest are intelligent. We believed that the main difference between people were those produced by conditions of environment or by education, and we believed that any person subjected to good social conditions and properly trained could with ease improve the quality of his intelligence. We were rather inclined to mistake learning for intelligence, and to believe that one who could acquire the former would acquire the latter. In a general sense, any one who managed to get through life without attracting attention by the inferiority or excellence of his reactions to his surroundings, was normal and average in his intelligence. We have never previously been able to determine and define in a practical way the degree of intelligence possessed by any one except on the basis of his past performance. If after trial he succeeded, he was regarded as of superior intelligence, and if he failed, he was set down as of inferior intelligence. Heretofore laboratory tests of a psychological nature, while demonstrating the reaction of an individual to some particular form of sensory stimulation, have failed to measure mind as a whole, or to give results of a practical nature.

TESTING THREE MILLION

How was this startling conclusion reached? What standards of intelligence served as the basis of grading? What were the tests used, and how were they applied? The story of the intelligence tests of the recruits is an interesting and instructive one. It had its beginning in the sudden necessity of fitting the 3,000,000 American soldiers for the important work be-

*Read before the Southern Minnesota Medical Association June, 1919, at Rochester, Minn.

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fore them, in the shortest space of time and with the greatest possible efficiency. From this mass of men, gathered from all walks of life, with different education and training, officers had to be chosen, engineering regiments selected, artillery men trained, the fighting men grouped together, service organizations developed, to meet an emergency which allowed of no prolonged method of selection by observation, or trial through experience. Never was a greater task imposed upon this country than to build a highly specialized army out of a horde of men with undetermined ability, of varying degrees of education, and of unknown intelligence. Hitherto there had been no known method of determining the capacity of a group of men for special work except by the slow process of letting them try what they could do, and eliminating those who were incapable or inefficient. If this plan had been used we could never have placed our troops in France in time to assist in the German defeat. The qualities that are required in making an artillery man are not those needed for infantry, and the men fit for pioneer battalions would be worse than useless if assigned to a machine gun company. Besides a perfect physical make up, our soldiers needed intelligence adapted to the special service they were to perform. A new and rapid method of determining the natural intellectual capacity of our soldier was urgently needed.

The physical examination of recruits weeded out those who were subject to disease conditions or who were anatomically imperfect. Those physically fit were sent into the line, those suffering from remediable conditions were sent to development battalions to recover from their temporary disability, and men who lacked soldierly qualities were sent to service organizations for manual labor and similar duties.

Every recruit was graded according to his trade or occupation. If he claimed to be an apprentice, journeyman, or expert in his trade, he was put through an oral examination and a performance test which demonstrated his claim was valid, and he was so rated upon his personnel card. The physical inspection was followed by a psychological examination, which gave a fairly reliable measurement of his intellectual endownment. By the combination of physical inspection, performance test and psychological examination, every soldier was rated as to his value to the army in the various positions he was fitted to fill. The information thus acquired as to the natural intellectual endowment, the nature and extent of his occupational training, and his freedom from physical defect, enabled the officers accurately to pick out those who were good fighting material, those who belonged in artillery regiments, those who were fit for non-commissioned officers, and those who were fit in service organizations to work with the pick and shovel. If five hundred electrical workers were wanted immediately in France, a glance at the rating cards in the personnel office at once gave the names with qualifications of as many electricians. By this very practical and wonderfully developed system, the horde of recruits was sorted out into an orderly and efficient army, whose efficiency has challenged the admiration of the world.

One of the chief requisites was to get an intelligent army, that had qualities of initiative, of capacity to entertain ideals, to realize the high purposes for which we were fighting, with an appreciation of the necessity of obedience and soldierly qualities. To the work of Binet we are indebted for the standards of intellectual growth and development, and these tests were modified to meet the requirements of the army. A Committee of the American Psychological Association was asked to arrange a series of practical tests, which were given a preliminary trial on several thousand recruits, and were then adopted as material for testing the soldiers in all the cantonments. The tests were such as could be applied to groups of two or three hundred, and were of a character that could be readily understood.

THE TESTS

The tests by which intelligence is measured in the cantonments are very simple and effective. Every soldier in the army was graded according to his natural intellectual endowment. Obviously this examination must be done upon large groups, as it would be impossible to individually examine a million and a half men in the time at our disposal. In each cantonment was a chief psychologist, with a highly trained staff, and with the necessary equipment rapidly and accurately to perform

the work. The men were examined in groups of from one hundred to three hundred. They assembled in a large room, and were first given the "Alpha" test. This consists of eight pages of printed diagrams, arithmetical problems, questions on general information, inverted sentences and other simple but shrewdly planned tests to determine the perceptive powers, memory, power of fixed attention, judgment and inhibition of the recruit. The psychologist explained in simple terms what the candidate was expected to do, and at a given signal the soldier began to answer the problems on the first page. At the expiration of a few minutes, the command "Attention" was given, and the pencil was raised in the air and held there until the second page of the problems was explained, when the word "Go" was given. In this manner, under a time limit, the problems on the eight pages were answered as fully and as well as the soldier's mental machinery would permit. The test takes forty-five minutes. The papers were than marked with the aid of a transparent stencil upon which were printed the correct answers to the problems, so that the examiners could see errors at a glance and check them. The system employed assured rapid and accurate work, and each recruit was given an intellectual grade corresponding with the character of his work. The system of examination eliminated the personal equation very completely, and assured fairness as well as accuracy in marking.

The Alpha test is not difficult. It comprises problems of the most simple nature, easily comprehended by any person who can read and write. In the experience of the examiners, higher marks have frequently been earned by many men who have gone through the fourth grade of school than by others who have had high school and college training. The tests do not particularly concern information acquired in the process of education, but solely the natural endowment of the man as manifested by the quickness and accuracy of his perceptive processes, the power of his mind to retain impressions, his capacity for fixed attention and logical deduction. In this respect it is not a test that depends in any degree upon educational or social conditions.

For those who could not read or write, as well as for foreigners, who are handicapped by language difficulty, another test designated as the Beta test was provided. This also consists of eight printed pages of problems, almost entirely pictorial or diagramatic in character. One page consists of mazes through which the recruit was to thread his way with a pencil; another page required him to supply missing parts in the pictures of animals and objects. These tests are not more simple than those in Alpha, but are more easily comprehended because they are pictorial. When a recruit made a poor score in the Alpha test, he was given the Beta test to ascertain whether he is handicapped by the printed or spoken word. Occasionally a man who has scored rather poorly in the Alpha will raise his marking in the Beta test, but usually failure in Alpha is also followed by failure in the Beta test.

When the recruit failed in the Beta test he was given an individual Binet test. This is an oral test, in which questions are asked and answers required. These tests have been carefully worked out according to the mental capacity of children. It was found by the long and patient researches of Binet and others, that a child of seven can answer correctly five simple questions which a child of six cannot answer. This established a mental age limit for the six-year old child. The child of ten can answer a series of questions which a child of nine cannot correctly answer, and this establishes the mental age limit of the nine year old child. Upon this series of tests extending over a long period of time, and involving many thousand of individuals, Binet worked out his very accurate grading of the mental age of children and adults. The normal adult age is reckoned as sixteen years. When a man of thirty grades at thirteen years of mental age, he is said to be three years retarded. When a child of twelve shows a mental age of fourteen, he is said to be two years advanced. While the mental age and calendar age is usually supposed to be equal, one is not said to be mentally retarded unless the difference is more than two years, because the retardation may be due to physical causes, ill health, faulty environment, and other causes. Where the discrepancy is greater than two years, these influences are not

operative, and mental defect shows itself rather definitely.

Mental defect begins with idiocy, where the mental age is under three years. Imbecility is divided into three groups; the low grade ranging from 3 to 5 years, the middle grade at 5 to 6 years, and the high grade from 6 to 9 years. Morons occur without definite upper limit, but seldom extend beyond 12 years. It is naturally difficult to fix a definite upper limit for morons, because it is a borderline state, in which imbecility shades off gradually into dull normality. Many sub-normal persons grade at 10 years, and many morons grade as high as twelve years. The nearer the person approaches to the average, the more difficult it is to establish a definite degree of deficiency. Below the mental age of 8 years, definite feeble mindedness is established. From 8 to 10 years is a border line condition of deficiency, sometimes classified as dullness, and often as feeblemindedness. From 10 to 12 is a state of mental dullness which is rarely classified as feeble mindedness.

It is in this large group who grade between 8 and 12 years that the moron is found. He is one who is up to the average physically, and in ordinary matters of a concrete character, expresses himself well, but who is unable to entertain an abstract concept, and who fails in adjusting himself to any complex environment in which logical reasoning is required. Morons are the prey to their emotions. They laugh and cry with equal ease. They have no thought of the future, or of other than the immediate consequences of their acts. They are the ones who yield easily to sex temptations, who are improvident, and who drift into pauperism. Content with satisfaction of their immediate physical needs, they have no other compelling ambition. They cannot, in the ordinary operations of daily life, be distinguished from the normal man; yet by the Binet test they reveal themselves, however physically adult they may be, as mentally juvenile.

One of the great revelations of the army psychological tests is the large number of men in all communities who are mentally juvenile without being definitely feeble minded. They are the dull normals, who pass in their environment as fairly law abiding but simple persons who are content with their stations in life, happy if they have jobs, but not much concerned if they haven't, drifting with the tide, yielding to the temptations of drink and sex, and living with not much more concern for higher things or the future than the animals they drive to the plow or the machines they tend in the factory. Great political or social changes do not concern them. Literature and poetry have no charm for their souls. Music and art gratify only their superficial and transitory emotions, and all their concerns are of a material character. "Brothers to the ox," they lead their lives neither acting nor reacted upon by their environment.

For the purposes of the army, recruits were graded into classes designated as follows:

Class A Very superior intelligence
Mental age 18+years.

Class B Superior intelligence
Mental age, 16 to 18 years.

Class C+ High average intelligence
Mental age 14.5 to 16 years.

Class C Average intelligence
Mental age 13 to 14.5 years.

Class C—Dull normal, rarely feeble minded
Mental age 11 to 13 years.

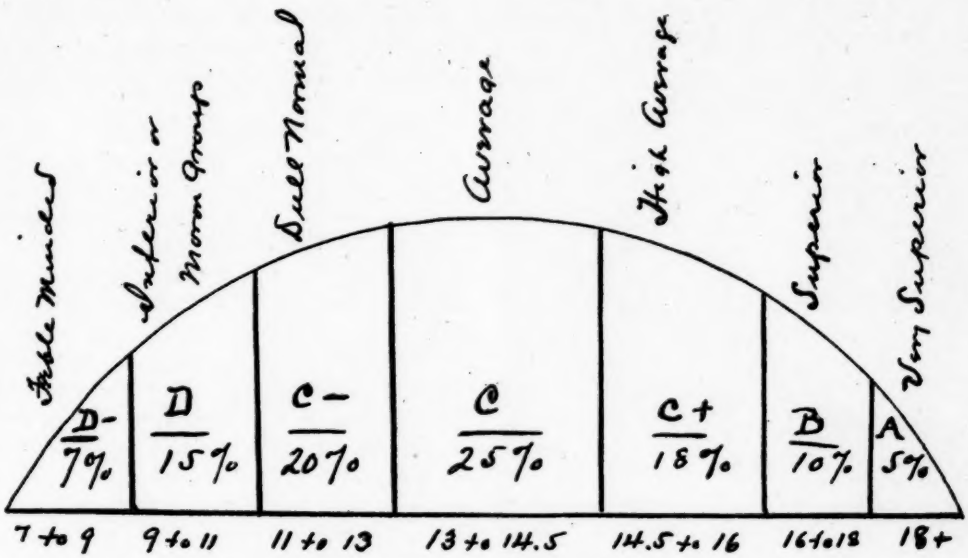
Class D Inferior, including morons
Mental age 9.5 to 11 years.

Class D—Mental defect, high and low grade.
Mental age 7 to 9.5 years.

CLASSIFICATION

The very superior (Class A) group is composed of men of superior adult intelligence, grading from 18 years of mental age upwards. They are the ones capable of receiving high school and college education. There is no limit to their intellectual possibilities. They may progress as far as their inclination and application will permit. In business and in social life they are apt to be successful. This is the class which leads in all occupations requiring very high mental qualities. They are the professional men, leaders in business or politics, who are able to apply a high degree of intelligence to the accomplishment of any purpose. From this class is selected commissioned officers of the highest type.

The superior (Class B) group is but slightly inferior to the former, and are men markedly above the average. They are able to make good records at college, to engage successfully



Intelligence grouping according to Mental Age.

in business or professions and while not as markedly active in their mental processes as Class A men, furnish to the Army a large number of commissioned and non-commissioned officers. The mental age limits of Class B is 16 to 18 years.

High Average Intelligence (Class C+), is represented by men of a grade of mental development somewhat above that of the average citizen. They are represented in society by foremen, electricians, telegraphers, railway clerks, mechanical engineers, book-keepers and similar occupations. Mentally they grade between 14½ and 16 years. They are able to complete high school and college training.

Average Intelligence (Class C) is represented in industry by shop mechanics, brick-layers, laundry-men, bakers, painters, blacksmiths, carpenters, butchers, brakemen, plumbers, chauffeurs, auto repair men, locomotive firemen and other occupations of similar kind. They as a rule receive a common school education, but rarely are able to get through the high school. Their mental age is from 13 to 14½ years.

Low Average Intelligence (Class C-) is represented by common laborers, tailors, cobblers, teamsters, miners, farmers, concrete workers, hostlers, barbers and other occupations where a maximum if physical effort and a minimum of mental exertion is required. They make good soldiers. They are rarely able to acquire education above the third grade of the elementary school, and their mental age is between 11 and 13 years, averaging a little less than 12 years. They are graded as dull normals.

Inferior Intelligence (Class D) represents the lower limit of the dull normals. They are of distinctly low mental capacity, slow in comprehending orders or in executing them. When properly supervised they are capable of doing routine and unimportant work fairly well, but combined with their mental dullness are other qualities of indifference, laziness, drunkeness and unreliability so that they could not be used to any considerable extent in the Army. They are represented by no trades or occupations, and are to a large degree shiftless, dependent, sex offenders, drug addicts, and petty criminals. This is the class which furnishes the largest percentage of morons, who live to gratify their present inclinations without thought of the future. In mental age they grade from 9½ to 11 years.

Very Inferior Intelligence (Class D-) is distinctly feeble minded. A few of them are simple rather than feeble minded, and are fit for certain common grades of work under supervision. The few who got into the army

were not trusted with anything important. They are in no sense soldier material, and as a rule were promptly sent to their homes. They rarely were capable of receiving any education whatever, though some have reached the second grade in school. Their mental age extended from 7 to 9½ years.

The grading of recruits according to these various classes is the most startling fact developed by the intelligence tests. Especially is this true when it is considered in relation to the population of the country. If this is assumed roughly to be about 100,000,000, the distribution of intelligence according to population, assuming that the results obtained in the army would apply to the general citizenship, would be as follows:

	Percent	Population	Mental Age
Class A	5	5,000,000	18 years or over
Class B	10	10,000,000	16 to 18 years
Class C+	18	18,000,000	14.5 to 16 years
Class C	25	25,000,000	13 to 14.5 years
Class C-	20	20,000,000	11 to 13 years
Class D	15	15,000,000	9.5 to 11 years
Class D-	7	7,000,000	7 to 9.5 years

These figures reveal the significant fact that 42,000,000 of the population of the United States are of the dull normal, inferior and very inferior grades, including in the two latter classes a large proportion of feeble minded persons and morons. They also reveal the fact equally startling that only 15,000,000 have reached the grade of adult mentality, and that the vast majority of our population are more or less mentally juvenile. If we assume that the psychologists are correct in estimating adult mentality at 16 years, we are forced to the conclusion that the vast bulk of our people approach the problems of life with the minds of children.

From daily experience we are able to comprehend the degree of judgment and will power displayed by the normal 12 or 13 year old child, influenced as it is by good or poor bringing up, by much or no education, by much or little experience, by moral or immoral surroundings. We can fairly estimate his capacity to resist temptation, to analyze motives and to entertain ideals. From this view of the minds of children, the ability of the average grown person with a low mental age rating to adapt himself properly to his environment is not such as to give us much confidence in his capacity to decide the problems that reach the higher levels of intelligence.

Combined with the low mental age is the other important factor of illiteracy. How great an influence has the lower three groups upon the astonishingly large percentage of people in this country who cannot read or write? If the psychological test is one which relates to the original endowment of the child, uninfluenced by educataion and training, we should find that among the illiterates a preponderant proportion of people in the D-, D and C-groups.

Gradings have been secured on a large number of recruits but all the statistics have not yet been collected, and consequently any deductions upon incomplete returns should be very conservative. Below is a percentage intelligence rating on 88,650 white soldiers of various grades of education:

81,114 Literate Whites,

D-	D	C-	C	C+	B	A
7.45	7.90	18.87	27.87	19.97	12.24	6.30

7,436 Illiterate and Foreign Whites,

D-	D	C-	C	C+	B	A
19.28	30.20	21.46	21.21	5.26	2.62	00

It will be seen that below Class C-, whose mental age averages twelve years, fall 34% of whites who can read and write, and in the same groups fall 71% of illiterate and foreign whites. In Classes A and B the literate whites reach 18½%, while the illiterate and foreign whites reach less than 3% in Class B and none in Class A. When it is considered that these groups are of the white and do not include the colored race, it is a fair inference that the general intellectual standard of people in this country should be lowered rather than raised, as experience shows that the mental age of the negro is about one year less than that of the white race.

The grading of intelligence by these tests does not mean that the distribution of intelligence is uniform throughout the country. Wide variations are found geographically, where local causes operate to produce a low average of mentality. During my period of service at Camp Dodge, where I was attached to the Board of Psychiatric Examiners, I had

the privilege of passing upon the mental equipment of many thousands of men, coming from middle western and southern states. The white residents of the Ozark region of Southeastern Missouri and Northeastern Arkansas graded the poorest, as judged by the percentage of rejections from the service for mental defect. Next in order came the colored recruits from Alabama, Tennessee, Oklahoma, Egypt, including Southern Illinois and East St. Louis. The ratio of rejection for mental deficiency was from 1.8% to 4.5%. On the other hand, Iowa and Nebraska gave a percentage of 0.03%. The high percentage of rejections in the southern states cannot wholly be accounted for by the lack of compulsory education, but largely by the inbreeding of the negroes and the fact that in psychological tests the negro rates about one year less in mental age than the white man. The contention of psychologists that the degree of learning one possesses has little or no influence upon the grade one reaches in these tests receives confirmation in the fact that Class A and B are sometimes reached by persons who have never been to school, and that persons with a high school or college education sometimes grade in C-. It is not to be forgotten in this connection that men in the group of D rarely are able to attain to more than the third grade in the elementary school, and those in C, or average intelligence, can rarely finish the high school course. Some other causes than lack of educational opportunity must be considered to account for the coincidence that the largest percentage of feeble mindedness is found in states where compulsory education is not enforced. The coincidence is rendered more striking when it is realized that the percentage of illiteracy reaches 16% in the southeastern states, 17.4% in the south central states, and finds its highest level in Louisiana, where it reaches 29%. These figures are suggestive that where the intellectual level is low, legislation in the matter of education is backward.

It must not be imagined that the psycholgical test is an absolute and accurate measure of all of one's capacities. It is solely a test of intelligence, apart from those many other qualities which make a man. Man is not a thinking animal alone. He possesses other and more important qualities. It does adequately measure one's quickness and accuracy of perception, his ability to fix attention, the relative quality of his memory, and his power to resist suggestion. It cannot give an absolute measure of his powers of judgment, emotional control, nor his power of inhibition. It cannot test character, initiative, moral sense, selfishness, idealism, nor other of the qualties that make up the complete man. It is a fair inference that the one who excels in the former will possess the latter. The one who has good memory, power of fixing attention, and quickness and accuracy of perception is more likely to possess good judgment, emotional control, and will power than the one who does not. Occasionally, however, it is true that the test fails. One man at Camp Dodge who achieved a mark of 408 out of a possible 412 in the test, was later discharged from the officers' training school for lack of adaptability and poor judgment. The test gives us certain indices as to the quality of certain faculties, upon which we may safely predicate the general quality of his intellect. Practical experience has demonstrated the value of these tests. The rating of soldiers by officers on the results of their work corresponds very nearly with the ratings given by the psychological test.

It is probably true that if there were no psychological tests, the gradings of soldiers by their officers might achieve somewhat similar results to those obtained by the psychological test, but this takes time. It would require six months or a year for an officer to study his men to ascertain their capacities for varying kinds of work, while the psychological test gives the same information in forty minutes. Moreover, in assembling a large army, it is a distinct advantage to know at the outset what are the ratings of the soldiers, so that they may be assigned to proper tasks and a greater efficiency reproduced by a judicious mixture of high and low average men. In a regiment there may be two companies with a very large percentage of Class C+ men, while in other companies there is a preponderance of Class D men. Best results are obtained by equalizing the grade of intelligence in the various companies so that the regiment will represent the average intelligence of the soldier. The best soldiers are those of the C and C+ grades. They have sufficient intelligence to appreciate the need of discipline, can properly

understand commands, and understand the necessity and advantage of obedience.

The astonishing revelations of the psychological test give rise to incredulity, and to many doubts and questions. How does it happen that such a low mental average exists in a world that is highly civilized? What are the causes of this phenomenon? How can we account for this lack of mental development? Do not the facts of our experience and of history controvert this new discovery? Can it be that our material civilization, progress in education, refinements of life, art, literature and all the influences that go to make society better have so utterly failed to raise the standard of intelligence? These questions naturally suggest themselves, because we seldom meet people in the mass. Each one is surrounded in his business and social affairs with his equals, and is apt to form his opinions from those with whom he comes in contact. Such contact as we have with the mass is casual. We see them in factories, street cars, and public gatherings, and if they do not bear the stygmata of defect we rate them as gifted like ourselves with high intelligence. Each one rates himself as the standard, unconscious of the fact of his deficiencies.

THE REASON WHY

Consideration of the low level of intellectual advancement would be incomplete if we considered the causes of such condition to be of recent origin. Man has progressed slowly in the thousands of years since he stood upon two feet. The physical progress from the time of the Pithecanthropus Erectus to that of the Piltdown man is not marked by very great changes in the human skull, nor is the difference between the Neandertal man and the present conformation of the skull very startling, although in each of these periods tens of thousands of years have intervened. If one can imagine a ratio of progress in physical development, is it not to be also inferred that the mental advancement in those periods has been proportionately slow, and that the growth of intelligence has been almost imperceptible? While anatomical changes in the outer covering of the brain have in our imagination been vaguely associated with the conditions of life of remotely ancient races, our imaginations are not equal to the task of picturing the workings of the ancient brain to the extent of estimating their acuteness of perception, memory, judgment, emotional control, and other qualities which are supposed to be related to brain development. It is only in the brief period spanned by history that we can from any approximate estimate of the mental development of the races. The tablets of Assyria show conditions of life not very dissimilar to those of the present day. There were then the same human relationships as now, as demonstrated by business transactions, transfers of property, suits at law, divorce and other social conditions, revealing an almost parallel state of society with the present. The highest points of civilization of the Egyptians, Greeks and Romans do not show any marked difference in intellectual level from the present. Between the highest points of development recorded as ancient historical events, and those lowest points upon which history is largely mute, covering the period from the decadence of Rome to the Twelfth Century, there was probably a median of intelligence in the world comparable to the results which the present tests show. It is questionable whether the general intellectual level of our present civilization is any greater than has existed in remote periods within the limits of history. History as a rule records the outstanding events of the centuries. It concerns itself with recording those occurrences in which marked political or social changes have taken place. Kings have changed the boundaries of countries, have changed free peoples to slaves, and slaves to free people, have altered the face of the globe because of political or religious differences. Notwithstanding all these events which brought glory to their reigns and fame to their memories, the average conditions of life and the mental progress of the peasantry and workers of the world in times past have escaped the recording pen of the historian. The intellectual status of the various peoples can only be guessed at according to advance or recession of the dynasties. So far as the average individual is concerned, his capacities have been judged only by his reaction to the various political and social changes that occurred at various periods in the history of the world.

In his recent work on Contemporary History, Schapiro has remarked that Caesar could have

lived in the period prior to 1750 without noticing any difference in the social or industrial environment from his own times. It is only since the middle of the eighteenth century that the environment of men has substantially changed. Prior to that time, the individual relations were local, simple, and calling for a minimum of mental exertion. Life was primitive, and there were few adaptations necessary other than to fit the average man for the limited relationships in which he lived. Agriculture was the chief occupation, and was conducted with primitive tools to supply local wants. Manufacturers, in the modern sense, were unknown. Each home was a work shop, and the products were bartered at the nearest town. Commerce was unknown because modern means of transportation were absent, and each dealer traded with nearby cities, and only in small amounts were manufactured products exported. General information was carried by infrequent letters, and by seldom published newspapers, and books were rare and highly prized possessions. The educated were few, and their training directed to the professions and government positions only. The mass of the people were illiterate. Serfdom was the rule in Europe. It terminated in Germany in 1825, and in Russia in 1863. The conditions of life were such that the reactions of the nervous system were slow and habitual, because of the absence of the frequent and violent stimulation of a more intensive civilization. Man was a reflex arc, with few and simple stimuli to reaction.

After 1750, Rosseau awoke the world to a new viewpoint of its political and social relations. The French Revolution freed the intellect and abolished the landed aristocracy. The industrial revolution in England that followed the invention of labor saving devices changed manufacture from the peasant's hut to the factory, and drew the farmers from their peaceful valleys to the active industrial life of the cities.

The whole world was intensely stirred by these revolutionary changes. The human mind, accustomed for thousands of years to adapt itself to simple conditions to which it had been adjusted, in the sense that the reactions were largely automatic, in the relative suddenness of a century and a half, was forced to adapt itself to a complex material civilization which called for the exercise of mental qualities of an entirely different character, and requiring a resilience which is slow in coming. It is no wonder that when the intellectual response of the average person is measured in the light of these conditions, he fails to keep to the high standard to which we had assigned him.

THE SPINAL CORD MIND

There are two elementary instincts which are constantly and imperatively dominating. One is self preservation and the other is reproduction. Through life, however simple or complex, these two elementary forces constantly impel us. All our activities, however far separated they may seem to be from these two stimulating forces, can ultimately be referred back to them. The man whose activities are exerted in accumulating great wealth by the various complicated business processes, might deny that he is actuated by the brute instincts of nutrition and reproduction, but in the final analysis all his endeavors lead to his own preservation and the nurture of his children until they are self supporting. He accumulates wealth and surrounds himself with luxury in order that he may better care for himself and assure the growth of his children through the long period of infancy. Among animals infancy is brief, and their young are soon independent of the parents, but among humans infancy is prolonged, and our young need care from babyhood to manhood's estate. We are apt to forget, in view of the diversity and amplification of conditions of modern life that through our entire period of existence we are striving, by different methods, but to the same end that the animal and the primitive man strove to preserve his existence and reproduce his kind.

The higher intelligence, by means of social custom and education, can and does conceal, even from himself, the rather discreditable fact that he is an animal with primitive instincts. We rather resent the fact that the same motives, modified by circumstance, that actuate the less cultured and intelligent, are propelling forces in our lives; but nevertheless, from the unicellular organism of pre-historic times to the present we respond to the same stimuli in

very much the same way. The first organized cell group arranged itself as a hollow nutritional tube through which water was impelled and from which the cell group derived sustenance. The next step was the development of sex organs in the same organism, with the subsequent differentiation of male and female characteristics in separate organisms. The primitive nerve force was a reflex. Food elements coming in contact with the cell stimulated muscular action and were consumed. As differentiation became more extensive and animals rose in the scale of elaborate development, reflex action became more perfect and adapted to the varying relations of the life of the organism. With the development of the brain, a vast association tract with registering apparatus by which stimuli and corresponding muscular action were recorded and coordinated, the processes of reflex action became at first automatic and later became the center of volitional action.

In the hundreds of thousands of years from the beginning of evolution the spinal cord has played the greater part in man's advance, and the brain as a volitional center has been less highly specialized and of much inferior development. The spinal cord still does the larger part of our thinking. That multitude of actions of which we are unconscious, the thousands of muscular adaptations which are automatic, the many involuntary movements which preserve our lives, are presided over and carried on by the spinal cord. The brain may originate an impulse, but in the majority of cases our consciousness is not aware of the fact, and the spinal cord thinks and acts for us. In the pre-historic animals the relatively small size of the brain is compensated for by the enlargement of the lumbar and sacral portions of the spinal cord. The lumbar enlargement of the spinal cord in human beings still remains, and who can say how large a share of our complex life is taken by this rudimentary relic of our early evolutionary brain. It is not unfair to say that man in the present, as in the past, does the far larger part of his thinking with the spinal cord.

In proportion as the intelligence level rises, the brain activity increases, and the less the reflex action of the spinal cord determines the choice of motive and the reaction of the individual to his environment. In the superior mental group emotions become more highly specialized, they are submitted to analysis, they have a higher plane, and are subject to greater inhibition. What we call control of emotion is similar to the governor of a steam engine and regulates and steadies emotional response. One of the principal distinguishing features of the higher intelligence is the ability to properly control emotional output, and to adapt the response more proportionately to the stimuli. With this goes also keener perceptive qualities, greater ability to differentiate between stimuli, more capacity to associate past experience with present impulses, and a more highly trained judgment.

With the lower groups of intelligence these qualities are lacking in varying degree as we descend to the stage of the imbecile, who possess few of these faculties. In the lower group D-, D and C-, we find a greater predominance of the spinal reflex action. With slower preception, less power of discriminating attention, more faulty associative powers and markedly less power of inhibition, they respond less keenly to stimuli, and their response is more apt to be of the spinal cord rather than of the brain type. Choice of motive is governed in larger degrees by immediate wants than by future advantage. Present pleasures attract without consideration of ultimate consequences, and choice of motive is apt to be impulsive rather than deliberate. Their reactions to their environment are in line with their more primitive instincts of nutrition and sex impulse. The call of sex and stomach are immediate and pressing, with little consideration of the future. The failure to adapt themselves properly to their social environment brings them into disharmony with the social structure. They become dependent in an economic sense, and are unable to properly provide for their offspring. They tend to become paupers, petty criminals and sex offenders. Without adequate power to appreciate the value of higher things, unable to comprehend anything beyond the concrete, they are as a rule devoid of ambition, of desire to better their situation, to take any larger share of the work of the world than that necessary to nourish themselves and to repro-

duce their kind. Unable to assimulate anything beyond the lower levels of education, they become burden bearers of the world, giving in some degree their physical powers to the service of others higher in the level of intelligence. Their contribution to society is principally muscular.

GOVERNMENT

The question of intellectual status of our people is by no means an academic one. It is not sufficient to grade people into groups according to their mind power, and to leave it there as a purely interesting phenomenon. No fact of recent scientific investigation is more pregnant with meaning than that over half our population is mentally juvenile. The consequences of such a scientific discovery affects us nationally as well as individually. We are a democracy. We have a government of the people, for the people and by the people. It is our proud boast that we determine our own conditions of government, that no monarch can curb our liberties, and that each citizen has his vote in deciding the questions that concern life, liberty and the pursuit of happiness. This is no doubt true.

In the light of recent social phenomena in eastern and central Europe, the relation of low intelligence standard and spinal cord thinking to government becomes full of significance. Serfs until recent years, illiterate, deprived of all contact with things that tend to elevate, and seeing that after their new release from political serfdom they were still bound by the chains of an economic serfdom not less cruel, it is not very surprising that they have determined to destroy the instrument of their oppression, without much thought of causes or remedies. Primitive emotions rule, and in their destruction of the burgeoise they see the breaking of the bonds that withhold them from the utopia of their dreams. Upon the simple minds and uncontrolled emotions the more intelligent leaders impose their will. Unthinking they blindly follow where they are led, without thought of ultimate consequences and with the vain belief that by destroying a system they can change human nature. The present motive is to them the best one. To destroy their rulers is only to subject themselves to the autocracy of their own selfishness. Whatever good may come out of the present economic maelstrom will be due not to foresight, plan and deliberate thought, but to that innate adaptive force which gradually adjusts human relationships along lines that promote the well being of the mass of people.

We must not forget that if the intelligence of the majority of the people is upon the level of twelve years of age, we must expect that the degree of judgment which they express in politics will not materially differ from their judgments upon other concrete facts of life. The average man, being swayed by the two great primitive instincts of nutrition and reproduction, is influenced in politics by that kind of government which best caters to these two instincts. While high emotions and purposes for a time may sway him from this dull level of his plane of existence, inertia tends to restore him to the former level, and he succumbs to the inevitable law of providing for and protecting himself and his family. That form and kind of government is to his mind best which in the fullest degree provides for these two natural instincts.

On the other hand, the superior and very superior groups, with a farther vision, with greater capacity to see the desirability of changed conditions, is not insensible to higher things, and is constantly striving for the realization of ideals in government and life. This relatively small 15 per cent of the people represent what is the thinking force of the community, and consciously and unconsciously directs and controls the eighty-five percent of average people. Where the fifteen percent is altruistic, impelled by high purposes, the largest share of freedom and good government obtains, and conversely, where this small percent is self seeking and innocent of high moral aims, the masses are exploited for the advantage of the few. In the world's history the actual government of peoples has largely been in the hands of the very superior five percent. It must not be understood that the "very superior" class represent superiority in emotion or in the so-called affective qualities of the mind, or that they are superior in the sense that they are less selfish than those lower in intellectual grade. They are superior only in intelligence, and this

weapon has more often been used for the oppression and enslavement of peoples than for their up-building and freedom. The dynasties which have ruled the world have acquired and maintained power by their superiority in intellect alone, and the finer qualities of the mind have not been their predominant possession. In government, in politics, and in commerce, power and wealth have gravitated to the very superior five per cent, and has by them been wisely or tyrannically used according to their inclinations or necessities.

In practical, modern politics, it is not difficult to discern how the "very superior" unscrupulous and selfish politician, appealing to the primitive instinct of nutrition by a shibboleth such as the "full dinner pail", "high wages", "pauper labor of Europe" and other empty political promises, sways the average voter to his side. However often the mass of voters has been deceived, it is always ready again to be betrayed by the same devices, for children slowly become sophisticated, and the lower fifty percent of the voters will always remain children.

Theoretically we govern ourselves, but by what miracle do the fifty million of mentally inferior control the destinies of our country to their own good? Whence comes the wisdom that shapes the policies of government and carries out the high aspirations of democracy? What part other than passive actors do the fifty per cent who are below average take in our political scheme? How can a democracy continue to exist except in name in a country where there is a high percentage of illiteracy and a majority of the people are controlled by instinct and emotion rather than by a high and competent degree of intelligence? Is it not a fact, regret it as much as we will, and ignore it if we can, that even in our democracy there is a controlling force composed of the five per cent of very superior intelligence who shape the policies, frame the laws and execute them for the benefit of the larger mass of people? Democracy, the rule of, by and for the people, is an ideal always striven for but never quite reached. In every country and time democracy has probably been the same, and the blessings of free government have always depended upon the wisdom, altruism, and purity of motive of the small controlling class. When the superior intelligent element have forgotten or betrayed their principles democracy has always given way to other forms of government, and again will do so. Disguise the situation as we may, the freedom of the people depends upon the high and pure aims of a small proportion of our voters.

EDUCATION

In the educational field the psychological tests have a most important place. This has already been recognized by Columbia University, which has dispensed with the customary entrance examination, accepting the candidates' credits as evidence of work performed, and subjecting him to a psychological examination to ascertain whether he is worth educating further or not. This method eliminates from college those whose natural gifts have been shown to be insufficient to make satisfactory progress.

The psychological ratings of the army show that the engineers occupy the highest place, the artillery men coming next in grade, while the physicians drag along near the bottom of the scale, surpassed in downward rating only by the dentists and veterinarians. During the past two years there have been many more applications for admission to the freshman class in the Medical Department of the University of Minnesota than the teaching faculty could properly instruct. It was decided to eliminate undesirable students by psychological examination. The result was most happy, for the ratings of the successful candidates equalled the high standards of the engineers and artillerymen. It is safe to predict that these physicians will make good in their profession, and will bring to their work the high intelligence that their exacting calling demands.

It is especially in the grade schools that the benefits of psychological examination will show the best results. The schools are in a rut from which in the past there has been no escape. Children enter the lower classes and are promoted usually upon their performance, but a certain percentage proves to be backward, and unable to learn. After the teacher has exhausted all her arts in trying to instruct this group, and the children have been two or more

years in the same class, they promote them on account of their age, there being too great a discrepancy in years between the young bright pupils and the older dull ones. The mentally retarded pupil is the bane of the teacher, and he acts as a retarding factor upon the rest of the class. All children, however, have to go through the same process, little allowance being made for differences in mental endowment, and no attention being paid to the fact that they cannot absorb and retain what they have been taught. The result is that backward pupils are often promoted regardless of their past performance, and with a view of grouping children of the same age together. It is easy to see the damage done by this unscientific system, and at the same time it is realized that the new tests render its correction easy. The Binet test applied to all pupils of the public schools at intervals of two or three years, determines within practical limits those children who are unable to make progress and who act as a retarding influence upon their brighter companions. By this method it is possible to group the mentally deficient in special classes for instruction. These classes may then be taught by a more objective method those things which their mental equipment fits them to learn, and they will be spared the humiliation of being the stupid ones in classes of smarter children. The cost of our school system would be materially reduced if such a plan were inaugurated, to say nothing of the very much increased efficiency in the matter of results.

More important than all is the fact that by occasional psychological examination at the various grades below the eighth the pupil's capacity can so be determined that his fitness for future occupation in industry can be demonstrated with approximate accuracy. It is futile to send through the curriculum of a high school the child whose mental age puts him into the C class, a group whom experience has shown rarely are capable of receiving a high school education. Children of the C-group with difficulty complete the grades, and the D group rarely gets above the third or fourth grade of the elementary school.

We must recognize, whether we like it or not, that there are backs made for bearing burdens, as well as heads made for directing and managing the affairs of the world. It seems almost treasonable to say that in this country men are not born equal. Such, however, is the fact, and in no manner does this inequality show itself more plainly than in the intellectual equipment with which people approach the serious business of living. Lack of recognition and acceptance of this fact by our educators has been productive of great inefficiency by waste of effort in our school administration, and of disastrous dislocation in industry by improper kinds of education.

Our educators must realize that ninety-five per cent of the people are manual workers. Why not educate them for vocation? Why waste years, money, hopes and endeavor in giving a highly cultural education to our youth? Why not fit them when the grades are finished for industrial pursuits? Why not draft to simple employments those who are unable to go beyond the fourth or eighth grades, and educate to promote the efficiency, economic advantage and happiness of the toiler.

IMMIGRATION

How may we improve the intellectual standing of our people? No plan is so obvious as that of filtration of the blood that comes to us from foreign shores. At present the ability to read and write and the possession of forty dollars is the passport of the immigrant to this land of liberty. Mere ability to read and write is no criterion of the desirability of an immigrant, and any dishonest person, with due diligence, can acquire forty dollars. The undesirable class of immigrants are the paupers, criminals, sex offenders, morons, imbeciles, and those whose inadequacy prevents them from taking advantage of the opportunities which our democratic institutions offer. Most of these classes are embraced in the inferior and very inferior groups, with a mental age of less than eleven years. The tendencies of immigrants and their desirability as citizens can with relative certainty be determined by psychological examination at the port of embarkation. If we are to have any restriction upon immigrants we should see that those limitations are such as will with relative accuracy eliminate those who are distinctly obnoxious. A test which demonstrates the mental age throws light upon the tendencies and limitations

of people, and appears to afford a desirable way of eliminating the unfit from our shores. By this means it is practicable for us to place a bar against pauperism. The low mentality that is unable to see beyond the present, that is unable to provide for more than immediate wants and unable to take advantage of American opportunity should find no place on our shores. From fifty to seventy per cent of prostitutes are high grade imbeciles or morons, and immigrant sex offenders might be largely eliminated by a psychological test. Petty criminals and others of higher grade are most numerous in the D and D- groups. Would we not protect society and lessen the financial burden of our reformatories and prisons by excluding these potential and actual criminals? While morality and character is not determined by the intellectual standing, it is a matter of experience that with low intelligence goes failure of judgment and inhibition, the two mental defects which are most prominent in the criminal. If we are ever to improve the blood of this country it must be by diluting it with a better strain, and in the determining of the mental age of the immigrant we have a means of testing the quality and purity of the diluent.

THE REMEDY

Is there any remedy for the conditions which grow out of the unequal distribution of intelligence? Is it not possible that by means of education, improved environmental influences or moral teaching that the quality of our citizens can be improved? These questions naturally suggest themselves, but they are hard to answer. Water will not flow higher than its source. The Class D boy cannot reach above a certain grade in school, no matter how long he goes to school. One can be educated only up to one's capacity to receive education. The limits of one's mental machinery determine the amount of learning one can absorb. We are what we started with, and only by the slow processes of evolution can our adaptability to our environment be increased. The history of the Kalikak family, the Hill folk, the Jukes and other notorious instances of transmission of mental feebleness through several generations illustrate the tendency of like to reproduce like, and of the feeble mind to generate defectives. Such exceptions to the rule as occasionally occur are atavistic. Defectives reproduce their kind in a ratio of two to one as against normal persons. Purifying the stock may be accomplished by eugenic methods, but their enforcement does not appeal to the mass of the people, and practical consideration of them must be abandoned. Eugenics should always be applied to the other fellow, but not to ourselves. Whatever society at large may think of us, we are always conscious that we are better than someone else, and that limitations of capacity of reproduction should be applied to others, and not to ourselves. Who is to determine the ones upon whom vasectomy is to be imposed, and who is wise enough to convince people that they should not marry? Will people tolerate and enforce laws that limit what is regarded as a natural function?

Improving the environment of people who are dependent and who are unable properly to adjust themselves to their surroundings has been tried by many philanthropic societies. Where maladjustment is due to temporary and local conditions much benefit has resulted. What charitable society has not upon its list people who have been assisted for ten or twenty years without material improvement? Model tenements have been provided with bath-tubs, which are ordinarily used to store the supply of coal. Something more than outside help is necessary to change the conditions of the dependent and pauper class. There is a condition of mental inertia which must first be removed. Helpless contentment with one's situation is the sign of mental inadequacy, and the symptom of chronic and hopeless submergence. Those of our people who are in Class D- and D cannot be lifted out of their situation by extraneous influences, nor can they extricate themselves by any means within our present knowledge.

Moral influences are the greatest lever in elevating and improving citizenship. While intellectually dull the average citizen is emotionally hyperactive. Playing upon emotion is followed by an immediate response either for good or evil. In response to the specious and attractive promises of the political demagogue, they readily "throw their sweaty night caps in the air". They will follow leadership of an emotional kind, and when the proper appeal is

made they throw their whole force in the right direction. Herein is the value of those social stimuli which take the form of religious teaching, patriotism, national and racial pride. If their ideas of social justice and altruistic aims and purposes are aroused, there is no length to which they will not go in support of justice and right.

While it is practically futile to try to educate those in the lower end of the intellectual scale higher than the limits of their mental machinery, the very superior class is not thus restricted. The sky is the limit of their educational possibilities. This is fortunate, for the well being of society depends very largely upon the proper use of high intellectual gifts by those who possess them. It must not be understood that with a high perfection of intellect goes a smaller proportion of vices than accompany less distinguished ability. It cannot be said that Class A men are more moral, unselfish, altruistic, or have finer characters than those less gifted. It is unfortunate that the higher the intellectual capacity, the more powerful it it for the exercise of selfishness, disregard of rights of others, and similar undesirable qualities. Education of the very superior class need not take the form of scholastic training, but must be education of a moral kind. Education of the superior and very superior classes is imperative. They must be taught the lessons that neither history nor human experience has yet taught them. They must learn that the inferior groups were not created to be exploited, that the brotherhood of man is a reality and not an empty phrase, and that their superior endowment must be used for the benefit of the race rather than for personal agrandizement. They must learn that justice in private and business affairs is as necessary as in public matters, and that the safety of our democratic institutions depends upon the ability of those richly endowed to refrain from taking advatage of those less gifted. They must learn that selfishness is despicable and hurtful to the individual as to the state. They must before it is too late, learn that their responsibility is the greater the more their power for good or harm is increased by their intellectual superiority. Unless they learn well the lesson that their duty is not to themselves but to the state, and to those who are less fortunately endowed, what perils may not threaten. Upon their education in moral responsibility rests the progress of civilization.

ACUTE MASTOIDITIS*

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Mastoiditis develops when a preexisting suppuration of the middle ear extends to the mastoid cells. Obviously then, we cannot intelligently discuss mastoiditis without, at the same time, considering otitis media purulenta. Furthermore, otologists are inclined to believe that there is some mastoidal involvement in every case of aural suppuration.

With rare exceptions the primary antecedent infection has its beginning in the nasal chambers, naso or oro-pharynx, following measles, scarlatina, tonsilitis or influenza. Occasionally, it results from bathing, diving or the promiscuous use of the nasal douche.

We have come to regard a simple myringitis, or even a lusterless tympanic membrane, especially in adults, when other signs of tympanitis coexist, quite as characteristic of acute middle ear involvement as the classical red and bulging drumhead.

In children the Eustachian tube is shorter, straighter and of larger caliber,—mechanical reasons which expain why the drumhead resists destruction much longer than in adults, as the aural discharge quite readily finds its way to the epipharynx.

When confronted with an impending or actual acute aural suppuration, our efforts are at once directed to measures which are intended to terminate the purulent condition of the middle ear and prevent a further extension of the process of the mastoid cells. Knowing that prompt and adequate tympanic drainage is the only rational therapy for acute aural suppuration, as well as being the most effectual means of limiting the disease to the tympanic cavity, we must in obedience to sound surgical principles, replace the older practice of merely puncturing the drumhead (paracentesis), by a free incision (myringotomy).

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In performing myringotomy we should bear in mind that the tympanic membrane is placed at an acute angle to the floor of the external auditory meatus and, therefore, in making the incision, the knife must be moved inward when the incision is made from above downward, and vice versa when the stroke is reversed. Personally, I prefer to begin the incision at the upper posterior quadrant of the tympanic membrane i. e., about on a level with the short process of the malleus, cut downward to a point near the floor of the meatus and then forward for about one-eighth of an inch. This produces a flap-like opening and makes for adequate drainage.

In order to visualize the field, a bayonet shaped myringotome should be employed,—the cutting edge of which should be superlatively sharp, as otherwise the membrane will be torn or the incision more or less ragged.

Leucocytosis and increased polynuclear percentage are always present when the mastoid cells are involved,—the white blood count being increased from one to eight thousand and occasionally mounting above twenty thousand. Therefore, considerable information may be gained from a comparison of daily blood counts.

Roentgenograms are of little value in the acute cases of mastoiditis but yield considerable information during what may be termed the subacute stage. At this period a good plate will usually show cloudy areas corresponding to the pathology within the mastoid bone. Furthermore, roentgenograms are valuable in indicating the position of the sigmoid sinus.

For years otologists have been familiar with the fact that temperature is not a constant symptom of mastoiditis; that while usually present in children, it is frequently absent in adults, even when there is extensive destruction of the mastoid cells.

During the first few days following the onset of acute aural discharge, the post auricular area is acutely tender, due to sensitiveness of the scalp tissues and the mastoid periosteum, but, as the mastoid bone is not sensitive, no significance should be attached to this symptom until later when if there is pain elicited by pressure over the region of the mastoid antrum or tip, we may safely assume that mastoiditis is present. However, it should be remembered that even in those cases in which other symptoms of mastoiditis are pathognomonic, local tenderness may be absent when the external corticalis is very thick and the periosteum unaffected.

When myringotomy has been done, or the drumhead has spontaneously ruptured, and the perforation enlarged, if small, what are the signs indicating that the tympanic process has not been stayed and pointing to an invasion of the mastoid cells?

Of paramount importance is an early bacteriologic examination of the aural discharge to determine the pathogenic micro-organism responsible for the infection. Mastoidal infections induced by the staphylococcus or streptococcus viridans, are rarely seen—the streptococcus hemolyticus being the usual organism found. Occasionally the streptococcus capsulatus predominates and, knowing that such infections are vicious and frequently fulminating in character, we at once become alert for the first signs indicative of mastoid envolvement, as the extension and destruction are so extremely rapid that very few patients recover without operation. In other cases, where the offending organism is less virulent then the streptococcus capsulatus. several days may elapse before the tympanic membrane perforates. There is also another class of cases observed, in which the tympanic membrane remains intact for two or three weeks. In three cases of mastoiditis recently operated, the pneumococcus was, in each instance, the predominating organism and the process was quite rapid and destructive,—the acute aural infection eventuating in mastoiditis in from five to eight days.

When the hearing becomes markedly impaired and there is a sudden cessation of the aural discharge, indicating an interference with drainage, the evidence of mastoiditis is conclusive and operation is indicated.

When tympanic discharge and severe pain persist for several days after free drainage has been established, the mastoid cells should be opened, as clinical evidence has proved that these are the cases classed as the hemorrhagic type of mastoiditis in which there is bleeding throughout the operation and the cells are filled with pus and bloody granulations.

There are two other manifestations of mastoiditis so full of meaning that they have been authoritatively accepted as pathogomonic evi-

dence of mastoiditis. First is the otoscopic picture. By direct inspection we note a shortened and contracted meatus, due to the edema of the upper posterior portion of the drumhead, and the accompanying prolapse of the corresponding portion of the meatal wall. Since the two meati are symmetrical, a comparison of the two will disclose the striking difference. Second, a persistently profuse discharge from the middle ear, especially when pulsating which continues over a period of ten days or longer, can be interpreted in but one way—that the excessive amount of pus cannot be furnished by the middle ear alone and that at least the mastoid antrum is sharing in its production. What could be more convincing of the truth of this claim than to note the prompt cessation of the aural discharge within a few days following mastoidectomy!

The addition to the foregoing group of symptoms of mastoiditis of insomnia, loss of appetite, constipation and the general septic appearance of the patient, completes the picture.

Mastoidectomy performed before complications supervene, is attended with little risk, even when the sigmoid sinus and dura are uncovered for inspection, as the danger of infection is slight providing the dura is not wounded at operation.

When operation is delayed until thrombosis of the sigmoid sinus, meningitis or brain abscess develop, the mortality is high, despite prompt surgical intervention.

Finally, if acute purulent otitis media is allowed to continue until the condition becomes chronic, making it necessary to perform a radical mastoidectomy, with the attending loss of, hearing, we are grossly guilty of neglecting to embrace an opportunity, by earlier operation, to conserve hearing, or even life, in many instances.

While conservatism is a commendable thing, it is surely not expressed by deferring myringotomy or mastoidectomy, when indicated.

DISCUSSION

DR. H. I. LILLIE, Rochester: I have been very much interested in Dr. Lewis' paper, particularly with reference to acute otitis media and mastoiditis, and I would reiterate what he said about early incision of the membrana tympani when there are signs of acute suppuration of the middle ear. The proportion of mastoiditis that develops in acute otitis is dependent upon the length of time that the middle ear has been left unopened. The more time infection has to work in the middle ear before drainage is instituted, the more we can expect to have complications.

As to the incision, I prefer to make the triangular incision as it affords a freer opening in the drum head and it is less necessary to make secondary incisions. I start the incision below and go up, and if there is any fullness in the canal wall, I make an incision through that. It will sometimes drain the middle ear better than an incision in the membrane tympani or the tense portion of the membrane itself. The infection usually starts with the streptococcus, and if the membrane is opened early the discharge is thin and watery and drainage free. The course of an acute otitis media may run anywhere from several days to several weeks without untoward symptoms, resolution finally taking place and resulting in as good hearing as the patient had before the onset of the trouble.

It has been pointed out that the streptococcus pyogenes is not so hazardous a risk as the streptococcus hemolyticus. The streptococcus capsulatus is likely to produce untoward symptoms early. In the presence of an acute otitis media, it should be customary to culture the organism in order to determine what you have to deal with. The streptococcus hemolyticus and mucosus capsulatus are fulminating organisms and produce many of the complications early.

The age and physical condition of the patient are important. In a child the outer sutures of the temporal bone are not closed as they are in the adult. The cortex is not so sclerotic, and in a child I think we can look for less untoward symptoms than we can in the adult. When the patient is advanced in years and the cortex is markedly sclerotic, it is easier for infection to travel along certain channels than it is in the child. That is an important point to remember, for the reason that it indicates earlier operation in an adult than in a child. When the superior wall droops down into the canal very early and pretty nearly obliterates the middle ear structure, it means that the small bone cells of the superior wall or near the mastoid antrum are infected and are producing swelling of the periosteum. In our experience, when we encounter night pain and insomnia, we have found that either the sinus or the dura was uncovered by the disease process.

As to the complications we have encountered in connection with mastoiditis, in a series of seventy-eight mastoid cases we have had various complications. In addition to a case of lung embolus, we have had one case which resulted in empyema, and this particular patient was operated under local anesthesia. The mortality was very low. We have had only two deaths which resulted two weeks later from erysipelas, so that the mastoid operation is a safe and life saving measure in the presence of

complications and should be instituted as soon as possible.

DR. E. W. BENHAM, Mankato: There is one point in connection with mastoid diseases that I desire to call attention to: In some cases the symptoms are so obscure that we are in doubt whether mastoid complications are present or not. In such cases we naturally, to clear up the diagnosis, try to determine the presence of infection in the ear and its progress from there to the mastoid process. The absence of middle ear symptoms under such circumstances cannot be relied on to exclude mastoid involvement, because it is possible for infection occuring in the nose and throat to pass through the Eustachian tube with little or no disturbance in the tympanic cavity and enter the mastoid process and produce there or beyond complications which are important and dangerous. I have seen one or two cases of that kind, and I have no doubt Dr. Lewis has, and a good many cases have been reported in the literature. It is a thing worth remembering. We cannot always be sure that mastoid complications are not present because of the absence of well defined local symptoms in the middle ear.

DR. LEWIS, (closing): The discussion provoked by my paper, indicates the interest which the subject deserves. It was written with the intention of being helpful to the general practitioner who is usually the first to see these cases. As Dr. Lillie has said, we may with safety defer operation in children much longer than in adults for the reason which he has pointed out. There is a feeling among many medical men and lay people that mastoidectomy is a dangerous operation; this is errorneous. As a matter of fact, simple mastoidectomy may be painlessly performed with local anesthesia. Of course, when operation is delayed until the complications referred to in my paper supervene, we are confronted with a very serious condition. I believe the tendency has been to depend too much on what is termed expectant treatment for aural suppuration. Now that the manifestations of mastoiditis are frank and well understood, the mastoid cells should be opened before complications arise, thereby promptly terminating the purulent condition, preventing complications and perserving life and hearing as well.

ROENTGEN EXAMINATION IN EYE INJURIES WITH FOREIGN BODY LOCALIZATION*

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Eye injuries are of vital importance to the general practitioner, who is first consulted. The results of such injuries are often so marked that they cannot escape even a superficial examination. The reverse however, is frequently found, when the entrace wound is so slight that it often escapes rather careful search. The patient presents few symptoms, he suffers no pain. His attention is directed to his loss of vision, which may be slight. The opportunity to save sight is often a matter of hours or possibly days and the recognition of the extent of such injury is the obligation placed upon the first physician consulted. Because loss of vision is often the only symptom present it is important to secure every possible examination without delay.

The saving of eye-sight received a great impetus with the advent of the magnet, and it was of equal importance to discover that the X-ray would reveal not only the presence of a foreign body, but permit its accurate location. This discovery called attention to the weakness of the magnet as a diagnostic agent, together with some actual risks in its use prior to a definite localization of the foreign body. This briefly presents the necessity for roentgen examination in every case of eye injury, attended with a partial loss of vision. The added difficulty of removal, because of structural changes taking place within the eye, makes it questionable whether one is safe to wait even a few days. It is the effort of this paper to present the possibilities of roentgen diagnosis, the accuracy of foreign body localization, and to discuss errors incident thereto.

It grows out of the examination of 231 cases, referred because of penetrating eye injuries. The writer makes grateful acknowledgment to the (30) oculists who referred these cases and gave timely assistance in development of points of technique. Fairly accurate date are available for 227 cases as follows: Right eye injured

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108; left 119; men 190; women 11; children 26. Foreign body found in 109 or 48 percent.

Eye localization involves the same processes used in locating metallic substances in other portions of the body. To secure this, it is necessary to have the foreign body shown upon the plates in relation to some fixed object. The plan of projecting the rays through the injured part, and again at right angles for two views, while very satisfactory in the extremities, is rarely available for eye purposes. The two reasons are; first, the difficulty of showing small particles when the patient is examined in the anteroposterior direction; and second, the uncertain position of the eye during such examination, because the eye is covered by the plate.

In marked contrast to the above, it is easy to show even minute metallic substances with a side exposure. Fortunately more than 90 per cent of eye injuries are due to metallic projectiles and most of these are magnetic. Two side views are necessary. The eye remains fixed while the target is moved the average pupilary distance (6cm) for the second exposure. Having a metallic indicator at a measured distance in front of the center of the cornea for the fixed point, the foreign body is measured in relation to it. Wires are arranged immediately next to the plate for convenient measurement. These should be placed so that their shadows do not cross the region of the orbit but close to it. The target distance used is 50 cm from the plate. This places the indicator usually 2½ to 3 cm from the plate. Three measurements are necessary. Two of these are direct viz: The distance back of the center of the cornea, and the distance above or below the horizontal plane. If the operator has carefully centered and measured the indicator, he will have little difficulty in recording these two measurements. This constitutes the exact part of the process and an error of more than a fraction of 1 mm should not occur here. The third is secured by triangulation and records the position of the body on either side of the perpendicular plane. It alone desides whether such body shown upon the plate is within, or at the side of the eye, or even within the opposite orbit. I have had two such experiences, finding the foreign body in the opposite orbit. A medicolegal case, No. 163, showed a foreign body on the temporal side of

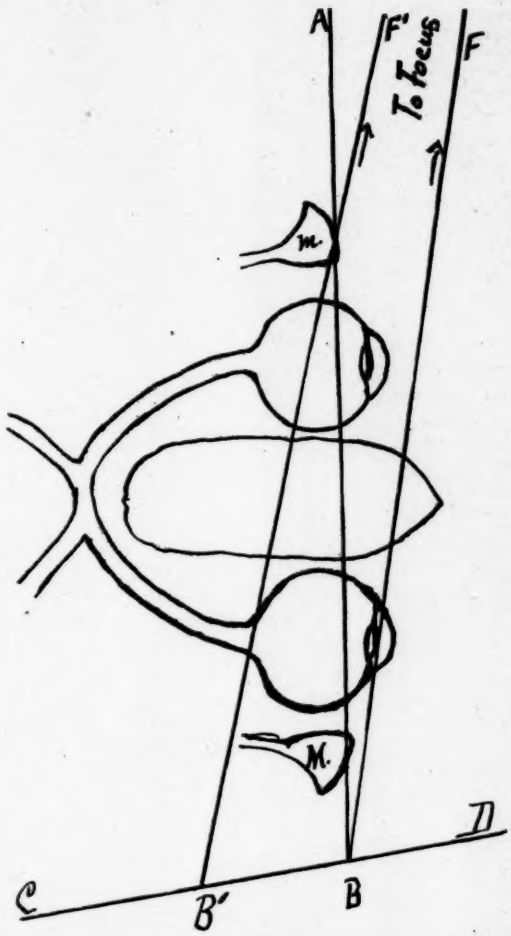

Fig. 1. Drawing to illustrate horizontal section of both orbits. C-D plate, M-M malar bones, F-B proper angle for rays, A-B improper angle for rays.

the opposite orbit, but none in the injured eye. Case No. 224 showed two foreign bodies. One, that of the immediate injury was located in the posterior sclera, while the other, the result of a former injury, was located in the nasal side of the opposite orbit. Unfortunately the above triangulation is not so exact as the other measurements and an error is possible up to 2 mm.

This localization procedure is best known as the Sweet Method, and manufacturers have produced two forms of the Sweet apparatus for such examinations. The original type is not only the simplest but the least expensive one. The improved is not free from objections. I

have used a modified form of the original type. Of these modifications, one, a chin holder, seems to have considerable importance. Because accurate measurements in millimeters are required, it is necessary to have the greatest possible head fixation. The ordinary provision did not fully accomplish this purpose. Careful measurements before and after exposure showed that the head moved several millimeters. This made accuracy impossible. To overcome this defect I devised a chin support which makes with those already in use, a triangular head fixation quite immovable.

The patient lies upon his injured side, fixing the eye upon a target at the same level, placed at a distance of five or six feet. You will note that when the patient takes this position the axis of the eyeball has changed inward towards the midline about ten degrees from its normal. This need not be considered except when the foreign body proves to be in the orbit, when corresponding correction must be made. It is important to center the indicator a few millimeters in fornt of the cornea, and to note the accuracy of such centering, and also its distance from the cornea, immediately before the exposure is made. This is perhaps the most important step because all measurements are made from the point of this indicator. There are two methods. The millimeter rule may be placed directly against the cocainized cornea which is the more accurate one, but this causes, in some patients, enough eye movement to prevent accurate centering of the indicator. The other method consists of measuring the distance with the eye closed, making sufficient pressure to overcome the thickness of the lid.

For eye fixation the operator is almost wholly dependent upon the co-operation of the patient Here the elements of fatigue and anxiety play a most important part. The slightest movement is fatal for localization. Oculists may not realize this, for they constantly operate while the eye makes slight movements.

Movement of the foreign body with the movement of the eye has been utilized to prove its presence within the eye. To some extent this is correct. A recent case, however, is an exception. The location was too far outside to raise any question of possible error. That it moved with the eye was evidence that it was probably caught in the eye musele, and so responded to each eye movement. This movement has less diagnostic value the nearer it lies towards either pole. The above measurement should be repeated immediately after the second exposure. It is reasonable to suppose that, if these two agree perfectly, the eyeball has remained in this position during the few seconds intervening. If they do not agree, triangulation is impossible. Whenever the foreign body proves to be close to the scleral margin it is necessary to check the examination. This is done by keeping the target in the same position for both exposures, the eye for the first exposure being as in the other examination, and for the second it is moved thirty degrees upward or downward, care being taken that the patient does not move the head in this procedure. With this movement of the eyeball the foreign body moves with it, if it is within the eye, or if it is fastened to its outer portion. It is of utmost importance to know whether the foreign body is within or without the eye. Plates should be over rather than under-exposed, and all negatives should be re-examined in another direction. Regarding accuracy, I have repeated an examination of the same patient some days apart, with a variation of less than one millimeter. It is sometimes impossible to secure the same point for measurement because the foreign body appears very differently in the two exposures.

Serious possible errors are made when the oculist depends upon the magnet for his diagnosis. Failure to get a "pull" with the magnet does not constitute a safe negative diagnosis. Many oculists insist that its use prior to localization does serious and unnecessary injury to the eye. But failure to get "a pull" is not infrequent, when localization permits placing the magnet very close to the foreign body. This may indicate that the body is non-magnetic, but frequently, persistence proves its magnetic quality.

Errors will be less if one is able to keep the patient free from fatigue and anxiety. This is particularly true when the roentgen examination follows the efforts of removal by the magnet. I have come to regard the first as more accurate than any subsequent examination because of the fatigue element. This is noticed particularly by the patient's failure to keep the eye fixed upon the indicated object.

Fig 2. Chin holding device. Indicator removed.

One cannot avoid some chagrin when failures occur. It is remarkable, however, that among careful workers so small a percentage of failures is recorded either in diagnosing the presence of the foreign body or in its localization.

Regarding the diagnosis, failures to find a foreign body when present are reported as follows: Sweet (Oph. Rec. Oct., 1909) reports two failures to show steel when present. Arcelin (Rev. Gen. deOph) reports a negative that proved positive, and Randolph (Ophthalmology) reports two negatives that proved positive upon enucleation. Doubtless many failures are not reported. I wish to report two cases. Case No. 185, my own examination, showed no evidence of foreign body on the plate, but upon enucleation a very thin shaving of steel was found, which presented its edge towards the rays. Another, case No. 162 had steel present, but a clear plate taken by a neighbor roentgenologist does not show it. My own examination shows steel 2 mm x 1 mm that was located in the vitreous. By the courtesy of the first examiner, I am able to show you both plates and so demonstrate the necessary position of the tube in relation to the patient. If you make a horizontal section of the orbit at its mid-point there is revealed triangular densities of the malar bones, which form the outer orbital border. A plane drawn through these two borders bisects the eye in its average position, passing very near the equator. In the plate that does not show the steel, the rays were directed through these two dense malar bones, and the steel was located in the same plane. The position described by Sweet in his earlier article places the target a little in front of the eye. The reasons for doing so is to avoid having the opposite malar bone appear in the area examined. The approximate angle should be about 10 per cent. This throws the opposite malar shadow entirely back of the injured eye.

Having demonstrated the necessity for placing the target anterior to a plane running through the two exterior orbital borders it is necessary to consider certain corrections because of this position. When the forward

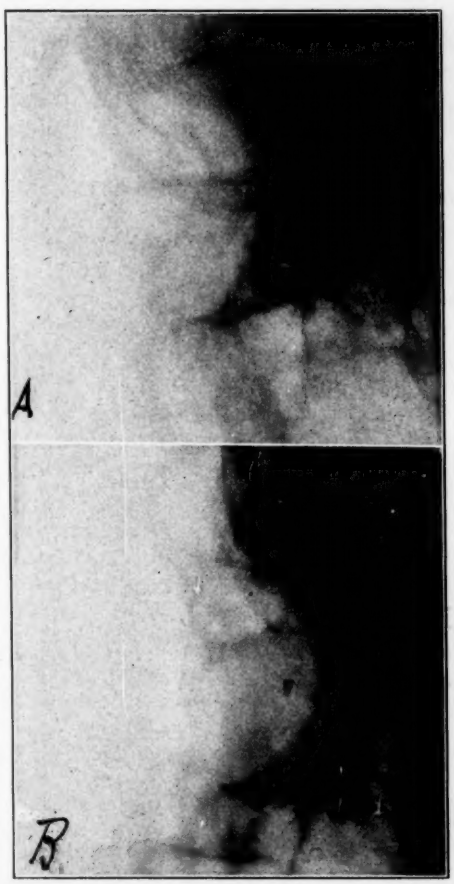

Fig. 3. Case No. 126. A. Examination not showing steel present. (Rays directed in line A-B, see Fig. 1.) B. Examination made as indicated by line F. B. of same individual.

angle equals 10 degrees, it is noticed that the following displacements occur. If the indicator distance is 40 mm from the plate, its plate shadow is displaced backward from the perpendicular 7 mm, while a foreign body, lying in the horizontal plane, 32 mm back of the indicator is displaced 10 mm. If the foreign body is at the equator 10 mm above the horizontal plane its displacement is 12 mm, but if located at the equator 10 mm below, its displacement is only 7 mm. After making the above corrections we have the two measurements which are the most exact.

Recapitulation

For diagnosis the three essential points are an angle of choice 10 to 15 degrees forward, an overtimed plate, and each negative result examined at other angles.

For localization fixation of the head and eye should include chin fixation. Time enough to secure the patient's co-operation and make measurements before and after exposures. An adjustable indicator fastened to the plate holder, a second examination with eye movements, care to avoid additional fatigue, and in charting the results, proper corrections.

DISCUSSION

DR. W. L. BENEDICT, Rochester: The subject of foreign bodies in the eye and their more accurate localization is of extreme importance to the oculist as well as to the radiographer. It makes a great deal of difference to the operator as well as to the patient whether the foreign body is in the eye or out of the eye. With the best methods of localization, especially the Sweet method, and other methods of triangulation, errors in localization have been reduced. A foreign body in the anterior chamber, or in the lens, can be seen by external examination. By the use of focal illumination and transillumination foreign bodies can be seen in the lens which otherwise could not be observed. They are sometimes missed in a radiograph. A foreign body, if it happens to be near the equator and is localized inside, may mean enucleation of the eye; if definitely localized outside some effort may be made towards saving the eye. Frequently foreign bodies cannot be found at the first examination. I think Dr. Donaldson has timely emphasized the point that more than one examination is desirable. Because not only may the patient move his head or eye, but it becomes very hard in cases of lacrimation and photophobia for the patient to fix properly, and if the patient is not able to fix properly with the injured eye it makes it much harder for the radiographer to be sure of his localization. He may have movements of the eyeball or of the head to contend with and, what is often overlooked, radiographers know there is a chance for the error in the Sweet tube stand setup of the X-ray apparatus itself. While shifting the tube from a vertical to a slanting position there is a chance for deviation because of change of position of the eye or head, which, when projected on the plate, will make a difference in the reading. It may throw the foreign body inside the sclera or outside the sclera. It is very proper to have more than one set of plates. Put the tube stand on another table, place the patient's head in a different position, and sometimes we find enough difference to pay us for doing it.

It was a common practice before the advent of the Sweet apparatus to have the patient look up and then look down; if the foreign body showed in two different positions, it was in the eye. If it did not show any movement it was outside the eyeball. I am glad Dr. Donaldson discourages that practice. A single plate taken sidewise or at an angle may show apparently a foreign body in the eye, when, as a matter of fact, it is far from the eye. It may be not only outside of the eyeball but outside of the orbit itself.

The rigidity of the tube setup must be emphasized. Given these factors, rigidity of the tube setup, rigidity of the patient, and control of the movements of the eye, we may secure, indeed, sharp localization. Foreign bodies near the equator either anterior or posterior to it may be localized inside the eye when actually they are outside the eye. It is feasible to localize foreign bodies from three exposures with the same tube setup, with the Sweet outfit. The advantage of this is that we have one vertical and two slanting rays coming from different directions which allow triangulation from both sides. In cases of multiple foreign bodies in the eye, they can be localized, even though they be close together in the same plane. In case of large foreign bodies with curled edges, two ends or two sides can be definitely localized within half a millimeter by the three exposure method of triangulation. The size of the wound, absence of signs or symptoms of injury, is no indication for not taking radiographs.

I believe the localization should be worked out by the radiographer and not by the surgeon, for the reason that the radiographer knows which exposure came first, and knows which is the slanting ray exposure and which the vertical ray exposure. While the oculist-surgeon should be familiar with the methods of localization, the actual localization should be made by the radiographer, and then when the case comes to operation the radiographer should be there to lend his assistance to the operator.

DR. J. D. LEWIS, Minneapolis: Dr. Donaldson,

who is one of the pioneers in this field in Minnesota, deserves much credit for the character of the work he has done and we are fortunate in having available, one who has made such close study of the subject to whom we may appeal for accurate information concerning these cases.

What does the ophthalmic surgeon do when the roentgenologist has located a magnetizable foreign body in the eye? If it is in the anterior chamber, it is a simple procedure to extract the intruder with a hand magnet; if located in the lens, it may be advisable to leave it undisturbed (as this tissue is very tolerant to foreign substances,) or we may extract the crystalline lens and the foreign body which it contains; if located in the ciliary region and the wound of entrance is of any extent, the situation is almost hopeless and enucleation is usually indicated. The same discouraging outlook obtains when the foreign body is in the vitreous, retina or choroid, whether the foreign body is left in the eye or promptly removed with minimum traumatism. It is a comparatively simple matter to localize a foreign body in the eye and the roentgenologist, skilled in his work, is able to indicate its position within a millimeter or two, so that the ophthalmic surgeon is enabled thereby, to elevate the conjunctiva, make a "T" shaped incision and extract the fragment with a hand magnet. Accurate localization has rendered the hand magnet a valuable appliance and it has almost replaced the giant type. Prior to the present satisfactory methods of localization, the giant magnet was employed to draw the offender into the anterior chamber, but this procedure has been generally abandoned as it was so frequently impossible to dislodge a foreign body or to direct its course into the anterior chamber without its becoming entangled in the ciliary body or iris. As previously stated, whether a foreign body is left within the globe or extracted, the eye will ultimately become soft and atrophic. Foreign bodies located deep in the orbit are frequently not extractable and unless they are in contact with the optic nerve, they can be safely left in position as they are usually harmless. Weekers observation in the army, covering a series of more than eight hundred cases of various wounds of the eye, in which he did not see a single case of sympathetic ophthalmitis, will oblige ophthalmogists to revise their theories concerning the etiology of this condition.

DR. DONALDSON (closing): I appreciate very much the discussion of these gentlemen. There is one point I would like to add for the benefit of those who are perhaps not thoroughly familiar with the difference in tubes. For eye work, avoid the use of soft tubes. They have few penetrating rays. Recently, I had two cases sent in that had a good deal of exposure with soft tubes. There was difficulty in localizing the foreign body. With medium or hard tubes over-exposure of the patient, in order to get a satisfactory result, is not to be expected.

MASTOIDITIS, ACUTE AND SUBACUTE; RESULTS IN A SERIES OF OPERATED CASES*

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In cases of acute and subacute mastoiditis, operation, in general is indicated to remove the suppurtive process of the bone and to preserve the hearing function. In the presence of a complication such as extension of the suppurative process to the meninges or to the blood through the lateral sinus, the operator is confronted, not with the advisability of entering the mastoid process, but with the responsibility of saving life. Fairly early and complete operation will in a large measure avoid such responsibility. The less immediate serious possibility is the chronically discharging ear now generally considered by the life insurance companies as grounds for rejection of an applicant.

The literature of the last ten years furnishes few reports of series of cases in which operation was instituted in acute or subacute mastoiditis. Two of the more important articles are by Welty and by Borries. From the records in Mygind's clinic in Copenhagen Borries collected 1108 cases in which the total mortality was 10.7 per cent. The operation was considered the cause of 14 of the 119 deaths. Thus the mortality due to operation per se is reduced to 1.4 per cent. Welty reports 106 cases operated on with no loss of life. In his series there were six sinus thromboses, one temperosphenoidal abscess, and three serous meningitis cases. Welty advocates the complete exenteration of the mastoid process. He has not had to reoperate in any of these cases.

The evolution of the operation for mastoid abscess is interesting. Surgical interference has passed through the stage of simply incising the subperiosteal abscess resulting from rupture through the bone, uncovering the bone and breaking off the outer table to allow better drainage, to the now recognizedly advisable procedure of exenterating completely the mas-

*Presented before the Southern Minnesota Medical Association, Rochester, June, 1919.

toid process. Far better results are obtained by the latter method.

The 64 patients in our series of non selected cases were operated on between July 1, 1917 and January 1, 1919.

The age incidence in this series is noteworthy because relatively the same number of cases represented each of the first five decades. The youngest patient was three and one-half months, the oldest seventy-two years. Mastoiditis is evidently not confined to any one period of life.

The trouble in the ear had persisted on an average of four weeks before the patients came for consultation. In forty-four of the 64 cases the abscess in the ear had ruptured spontaneously before the ear had even been examined. In no region of the body has pain with temperature and other symptoms of infection been considered more lightly by the laity and by a great many physicians than pain in the ear. The person with addominal pain and a high temperature lasting but a few hours is very liable to lose his appendix. There seems to be no reason why the suffering of the patient with an abscessed ear should not be relieved early by incision of the drum membrane rather than late by spontaneous rupture. The longer the ear remains undrained the more certain is the development of the surgical mastoiditis. Every physician can and should know when looking into an ear whether the ear should be drained. Bacteriologic examination of the first pus is very important because it often gives warning as to the character of the suppurative process and prepares one to institute operation for thorough drainage of the mastoid at the earliest sign of extension. Disease of the mastoid is not in itself a possibility of great danger, but extension to the meninges or involvement of the blood stream through the lateral sinus are complications which offer grave prognosis, and frequently might be avoided.

The indications for operation in the series of 64 cases were significant:

1. In forty cases the swelling behind the ear pushed the ear outward, tenderness was exquisite, in other words, the cases bore a diagnostic label.

2. In fourteen cases the diagnoses were not definite from a general standpoint but were definite from the ear standpoint. These patients had a history of discharge of several weeks duration without a tendency to subside, pain at night causing more or less insomnia, and general lassitude; in these patients we have found either the lateral sinus or the dura uncovered by the disease process.

3. Ten cases in which the diagnosis was indefinite, from the general standpoint, presented definite evidence of extension of the suppurative process from the ear standpoint.

Two of six patients with sinus thrombosis, required jugular ligation and section; two patients had suppurative meningitis, one patient perisinus abscess with septic nephritis, and one Bezolds abscess of the neck.

What we choose to call the complete mastoid operation, rather than simple mastoidectomy, was used in all the cases, and in none in which the condition was in the acute or subacute stage has it been necessary to reoperate. In one case, that of a young man, a musician with a six months history, the otorrhea did not subside completely. Because the patient had retained very good hearing function, which we wished to preserve, the conservative complete operation was done. This was perhaps faulty judgment on our part. In no case were the findings less extensive than we expected and in most cases they were more serious than we had expected.

The postoperative stay in the hospital of the patients of this series averaged six days. Forty-eight patients had no postoperative incident while in the hospital; those in whom the sinus or meniges were involved had a stormy convalescence. One patient with pleurisy with effusion and a respiration rate of 70 per minute, on whom we operated for sinus thrombosis under local anesthesia, was very ill for three weeks. A boy with a severe septic nephritis and sinus thrombosis was very sick, and under the care of the pediatrist for several weeks. The patients with meningitis died. It is questionable whether they should have been operated on the face of such odds.

The average time for complete healing was 31+ days. By complete healing we mean that the ear is dry and the posterior wound closed.

Surprisingly little posterior deformity resulted in most instances. The open method of dressing was greatly modified so that only the lowermost portion of the wound was allowed to remain open; the upper portion healed by first intention. Four patients were discharged in fifteen days; one, an old lady, for whom dichloramine-T was used with little tendency to repair, was discharged after 128 days.

Two old men developed erysipelas while registered as out patients, one three weeks after operation, the other six weeks after operation; both died. One boy developed smallpox during an epidemic but recovered.

Four patients died, 2 had meningitis prior to operation, and 2 had postoperative erysipelas.

In 3 cases the otorrhea persisted; the disease, however, was really in the chronic state at the time of operation after which the discharge was greatly decreased.

One posterior wound in a boy with a tuberculous process, has not healed completely. He has since had a radical operation but the discharge from the ear continues.

The hearing was improved or remained the same as previous to operation in all but 5 cases. In fact, the hearing function is as good postoperatively as previous to the ear involvement.

Conclusions

1. Early incision of the drum membrane is imperative in inflammatory conditions of the middle ear.

2. In cases of definite mastoiditis operation is indicated reasonably early. The mortality is practically nil in the uncomplicated cases.

3. Preservation of the hearing function is fairly certain.

4. Secondary operation is rarely indicated if the mastoid process is exenterated completely.

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DISCUSSION ON THE JOINT PAPER OF DRS. LILLIE AND BARLOW

DR. J. A. PRATT, Minneapolis: It is very interesting to have had our attention called to the few cases that have required a mastoid operation. In the coming year of influenza infections I think we will have more cases in which it will be necessary to open the mastoid. During the past year at Minneapolis we operated on many cases that presented no mastoid symptoms, but simply a discharging ear following influenza. We made it a point, after four weeks of chornic discharge from the ear following influenza to open the mastoid. In those cases there was no tenderness, no bulging, and practically no pain or other symptoms except a discharging ear, and yet when we opened them we found the mastoid absolutely rotten. These cases looked septic and acted so. We should pay particular attention to these influenza cases as they are likely to get by the general practitioner who first sees them. When a man has a discharging ear that goes on for weeks and does not heal he should take that man to an otologist unless he is capable of caring for the patient himself, because the patient may not have the usual run of classic mastoid symptoms.

The paper was very acceptable in every way. One other point is with reference to running ear and its treatment. I wish to speak of the dry treatment, simply using a dry cotton swab, allowing the swab of cotton to rest next to the drum, filling the canal loosely, and teaching the patient to change the swab every five or ten or fifteen minutes as long as there is a profuse discharge. If this is done, a great many cases will never come to mastoiditis. With the complete drainage we get from the use of the swab, it will enable us to clean up a great many of these cases. If they do not clear up within two or three weeks, if they are not much better, it is well to open the mastoid, and after this a done you will find that these cases get well very rapidly.

TUBERCULOSIS WORK IN RURAL COMMUNITIES*

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Superintendent Southwestern Minnesota Sanatorium.
Worthington, Minn.

Practically all organized efforts which have been made toward the control and eradication of tuberculosis have been conducted by the cities. and the work of stamping the disease out of rural communities has been almost entirely neglected. There seems to be the prevalent idea that tuberculosis is not as common among those residing in rural districts as it is in the cities. This is erroneous for on investigation the disease is found to be proportionally as prevalent in the country. It has always been looked upon more

*Read at the third annual meeting of the Southwestern Minnesota Medical Society, Worthington, Minn., May 8, 1919.

or less as a city disease and apparently there is the general feeling that because one lives in the country where there is an abundance of fresh air and sunshine he can not have tuberculosis. Fresh air and sunshine in abundance will not prevent tuberculosis when not properly used any more than living near a lake will keep clean one who never takes a bath. If those living in the rural districts are going to close all windows and openings through which air may enter and then crowd together in one small room as is often the case, tuberculosis will be as prevalent or more so than in the cities where there is less sunlight and fresh air, but where the residents live under better sanitary conditions in the home.

If the campaign against tuberculosis is going to be a success it will have to be waged in rural communities as well as in the urban, for the need is as great. But it presents a rather more difficult problem; first because many rural districts do not have health organizations; second it is harder to find those suffering from tuberculosis; third they are more difficult to look after when discovered; and fourth there is much to be done along educational lines to eliminate some of the erroneous ideas many have regarding the disease. There is an all too prevalent idea that as long as one suffering from tuberculosis can go around he is not a source of danger. But let this same patient enter a sanatorium and be instructed how to take precautions and then, although he may be perfectly safe to associate with, everyone wants to shun him as being dangerous.

The unwarranted fear of tuberculosis of itself is doing more than anything else to hinder a successful fight against the disease. The careful and conscientious consumptive is not a source of danger when associating with you. It is one who does not know he has the disease or knows it and does not take precautions that should be avoided. There are many (and I am sorry to have to admit, some physicians) who hold up their hands in holy horror when the sanatorium is mentioned and are afraid to come near one for fear of contracting the disease. There is no safer place for one to be as far as the danger of contracting tuberculosis is concerned than the sanatorium. Why should one be so afraid of the sanatorium when he can not show that any employee has ever contracted the disease while working there? If instead of this attitude those who were so afraid would visit a well conducted institution and see how things are taken care of to prevent the spread of infection, I feel that many would be of a very different opinion. The patients are instructed how to cough and allowed to expectorate only in receptacles provided for that purpose, and the eating utensils are sterilized after each meal. The precautions taken make it absolutely safe. Compare this with going into a restaurant and eating with a fork or drinking out of a cup or glass that has been used by an advanced consumptive and only rinsed in warm water, or being in a close and crowded train and having an advanced case cough into your face. This is often done, and many, in their ignorance, seem to prefer it rather than be where they are protected. Think of the cases of tuberculosis on the streets that are uncared for and who are exposing others simply because they don't take precautions. A few common sense reflections would be a great help to many and if the truth could be instilled into every one, the tuberculosis problem would soon assume a very different aspect from the one we confront at the present time. The campaign in order to be a success will have to be conducted along educational lines. Many of the present ideas regarding the disease will have to be removed and others instilled into the mind of the average individual. Tuberculosis is preventable and curable. In order to prevent it the open cases which spread infection must be found and either made to enter a sanatorium or to observe the rules of sanitation in the home.

Now that we have tuberculosis in the rural districts and this is a rural community with its full amount of tuberculosis, something must be done to overcome it if possible. Probably there is no more typical rural community than that of Southwestern Minnesota. It is the richest farming section in the state; still, it has tuberculosis. One should need no better proof of this than the fact that although the Southwestern Minnesota Sanatorium which takes care of patients from this section has been open only one month it is nearly filled with patients and at the rate they are being admitted it will soon have a waiting list.

To successfully handle the tuberculosis prob-

lem in any place it is necessary to make an organized effort and do the work in a systematic way. The result will depend greatly on the co-operation and assistance the general practitioner gives, for he is in a position to be one of the most important cogs in the wheel of success. He is the one who most often first sees the patient and whose council and advice the patient is most apt to follow. His position is such that the success of the campaign will depend as much on him as any other one factor, and without his aid and assistance it will be a failure. It would seem that every one would be willing to lend his aid not only that suffering might be lessened, but that he and his family might be protected.

The work should be directed along preventive lines as well as that of caring for active cases of tuberculosis. If infection can be prevented the disease will not develop. In order to prevent infection its source must be eliminated; in order to eliminate the source it must be found; in order to do this every open case of tuberculosis must be located. This is the important thing in a campaign and a big undertaking. This is the hardest part of the fight against the disease. It is not expected that every case in the community can be found at once, but every effort should be made to find them. They will not be found if they are not looked for, and when they are looked for, many will be found which were not suspected. These should be found and either cared for in the sanatorium or made to observe the rules of sanitation in the home. The sanatorium is the training school for the tuberculous and if every case could be gotten into such an insitution as soon as possible after the disease begins, he could be instructed how to take precautions to prevent its spread and could also be given an excellent chance to regain his health. The work a sanatorium does in the way of teaching the tuberculous how to take precautions and thus protect others is well worth what it costs, even if none of the patients were restored to health. The results obtained in restoring patients to health will depend largely on the condition of the patient on admission; if an early case the chances for recovery are excellent. The sanatorium can not restore the far advanced case to good health any more than a house that is practically destroyed by fire can be restored to its former condition by turning on the hose. The fire department can prevent the spread to the other houses and thus save them. The same is true of the sanatorium; it may not be able to save the individual but it can protect others.

As stated above the first and most important thing is to find all open cases of tuberculosis and have them properly taken care of either in the home or sanatorium. If we stopped here the work would be incomplete. When a case of tuberculosis has been found, everyone with whom he has been in close contact should be carefully examined. It is now known that childhood is the period of life when the danger of infection is greatest and any child known to have been exposed through contact with an open case should be periodically examined regardless of apparent good health. This might appear at first thought a stupendous undertaking and one impossible of accomplishing, but it is the only way to successfully combat the disease. When the consumptive has been taken out of the home its condition should be looked after and the other members of the family instructed in how to live to prevent the disease from developing. In order to do this successfully it will be necessary to have the assistance of a nurse. Right here I would like to say a well trained visiting nurse is one of the most important agents in the successful handling of the tuberculosis problem. She can be of immense help to the family physician and can often accomplish things with the family he could not spare the time to do. It can be readily seen that if the fight against tuberculosis is to be a success, co-operation will be of the greatest importance. The general practitioner may find the case but will need the sanatorium or nurse to help care for it and see that the other members of the family are properly looked after. The nurse can accomplish more in instructing the patient how to take precautions and to see that the proper conditions exist in the home than the physician, simply because she can give more time to the work. The sanatorium offers the best chance to the patient for recovery and can better teach him to take precautions how to prevent the spread of disease.

To wage a successful fight against tuberculosis in any community the following agents are necessary:

1. A sanatorium, well equipped and provided with a capble staff of physicians and nurses.

2. A visiting nurse or nurses as necessity demands.

3. The interest and co-operation of the medical profession.

4. The education of the public in the right direction regarding tuberculosis by means of County Health Organizatons or other organizations which may be interested. Every community should have a County Public Health Association, and I trust the physicians may use their influence to bring about such an organization in their respective counties.

I don't wish to be misunderstood and leave the impression that every case should be hurried off to the sanatorium as soon as found, for that is not my idea. The sanatorium is the place to get the best results in a majority of cases, but there are some not suited for sanatorium treatment. Each case should be handled individually. When the sanatorium is the place for a particular patient, he should be placed there. When he can be successfully handled in the home and wants to be there, his wishes should be considered. The sanatorium should be the base from which all the tuberculosis work of the community is directed. It should be able to care for those cases needing sanatorium treatment; to provide physicians to conduct clinics and examine patients, and furnish visiting nurses to give instruction in the homes and help the family physician look after cases that remain at home.

The visiting nurse is of immense value in educating the public and can be of valuable assistance to the physician in helping him take care of the case and instructing the other members of the family. She can hunt up suspected cases and urge them to be examined by the family physician or come to the clinics and be examined by one of the sanatorium physicians. She should visit all homes where there has been a case of tuberculosis and see that the proper precautions are being taken. A complete record of the home conditions should be made. It is also highly important to have her visit the patients who have been discharged from the sanatorium to see that they are living the kind of life necessary to prevent a future breakdown. An ex-sanatorium patient is very much like a mischievous child and is on his best behavior if he knows he is being watched. The work of following up all discharged patients is highly important for in this way the real value of the sanatorium can be ascertained.

In order to get the best results I feel that all cases should be reported to the sanatorium as soon as found. A visiting nurse should then call on the physician who can engage her services in instructing the patient in the home and looking after the welfare of other members of the family or else use her influence in getting the patient to enter the sanatorium. She should keep a careful record of the case, showing the patient's attitude, willingness to co-operate, condition of the home, number exposed and recording the advice given.

Every means possible should be used to educate the public to the real truth regarding the disease, its curability, its prevention, etc.

With all of the above agencies working in harmony most of the cases of tuberculosis could be found and carefully looked after. When this has been accomplished the death rate from the disease will rapidly decline.

This community has the sanatorium; a visiting nurse is employed by the sanatorium and others will be added as need demands. I believe the physicians of southwestern Minnesota are going to be interested in doing what they can to eliminate tuberculosis. For the interest already shown would indicate this. The machinery is here, it is only necessary to put it to work to accomplish the desired results. The Southwestern Minnesota Sanatorium is the best constructed and equipped of any institution of its kind in the United States serving strictly a rural community. I say this without fear of having the statement challenged. With your support and co-operation the work of eradicating tuberculosis in southwestern Minnesota will be as successful as in any community of our country. Will you give your support and let others see what can be accomplished toward wiping out tuberculosis in rural communities?

ORGANIZATION OF MILITARY HOSPITALS; GENERAL CONSIDERATIONS WITH REFERENCE TO THE TREATMENT OF WAR WOUNDS

By Antoine De Page, M. D.,
LaPanne, Belgium,
Surgeon-General of the Belgium Army.

In organizing our hospital at LaPanne there were three points we kept clearly in mind: first, rapidity of the treatment; second, continuity of treatment; and third a close association of the laboratory with the surgical work.

As regards the rapidity of treatment, in the beginning of the war the hospitals were situated from forty to fifty miles behind the lines, and the wounded soldiers brought to the hospitals were in an awful condition. We than began to establish hospitals about six miles behind the lines, so that it was possible to get the wounded soldiers in, from four to eight hours. This change resulted in great progress, but this was not enough for abdominal and chest cases and cases of emergency. Therefore, we established advance posts a little behind the lines where they could deal with abdominal and chest wounds, and by so doing we were enabled to reduce the mortality of abdominal and chest wounds from 65 to 45 per cent.

With reference to the continuity of the treatment, the wounded men were treated by the same surgeons until absolutely cured. In order to carry this out, the hospitals were enlarged as much as possible, and to give you an example, all the nerve cases or injuries that passed through our hospital were kept under observation and under my control from the time they were received until they were operated, and even after operation they were still under my control.

As to the close association of the laboratory work with the surgical work, it is not necessary for me to say much about that phase of the subject because you see here in the Mayo Clinic the value and great importance of that.

As to the progress made in the general treatment of war wounds, one of the most interesting things is the secondary closure of infected wounds. Secondary suture of wounds after infection enables us to cure a man within two or three weeks, and this is especially interesting when we come to consider open fractures. Formerly, in cases of open fractures, it used to take six or seven months before a complete cure was effected. At the present time, by secondary suture after infection, these fracture cases are cured after two or three months. Furthermore, at the beginning of the war, when we did not make secondary suture, only five per cent of the men who sustained fractures of the femur were sent back to the front, but since we have been resorting to secondary suture in cases of fracture of the femur, 50 per cent of the men have been sent back to the front.

In the matter of amputations great progress has been made. We do not pay as much attention to the flap as we formerly did, but it is important to secure as good a stump as possible for the application of an artificial limb.

Progress has also been made in the treatment of injuries of the knee joint. In the first period of the war, or until July, 1916, all our knee joint injuries were infected. During the second period, from July, 1916, to July, 1917, we used the Carrel-Dakin method of treatment in cases of infected joints and our results were much better. In the third period we resorted to primary suture of the joints. As soon as the patient came in the joint was opened, the foreign body was removed, the lacerated tissue excised, and the joint sutured immediately. In those joints in which there was no injury to the bone, which we treated in this way, 96 per cent healed by first intention; only 4 per cent became infected. In joints where there was at the same time injury to the bone, and which we treated by primary suture, 89 per cent healed by first intention; 11 per cent became infected. Then, after inaugurating the Willms method of treating infected joints, practically all joints healed by first intention. Willms method consists in making a double arthrotomy in cases of infected joints, and then have the patients make active motions.

With regard to the wounds of the chest, in the beginning of the war, when there was not

Read Before the Southern Minnesota Medical Association at Rochester, June 23-24, 1919.

much activity displayed in operating on these cases, 27 per cent of the patients with chest wounds died. Later on the results were much better because operations were more frequently done. Operation consisted in closing immediately open hemothorax; if there was bleeding, by stopping the hemorrhage from entering the pleural cavity. If a foreign body remains in the chest and gives no trouble, it is localized. If the foreign body causes trouble, an effort should be made to extract it. If a chronic empyema develops later there is no need of doing an Estlander or Schede operation; we can sterilize the cavity by the Carrel treatment and make a secondary suture of the wound.

To determine better the moment most favorable for suture, we have supplemented the counting of the microbes on the smears subjected to bacteriological examination by cultures instituted regularly after debridement and before the suture, and conclude that: (a) for wounds feebly infected from the first day with ordinary microbes we may proceed to suture when at the second examination a smear yields only one microbe in a visual field. (b) For wounds strongly infected by ordinary microbes, we may resort to suture from the moment the curve comes down to one microbe in four fields. (c) For streptococcus infection we should never suture, but submit the wound to adequate treatment, preferably that of Carrel, and wait until the streptococci have disappeared, or become sufficiently attenuated to permit primary union. Streptococci vaccination may here render the greatest service. Immediate primary suture may be made immediately after debridement or from two to four days after debridement. Delayed primary suture or early secondary suture is done without refreshing the wound surfaces, by simply approximating them. The suture may be made in the course of the granulation of the wound when sterilization is assured. Secondary suture always necessitates the refreshing of the wound surfaces. The objective towards which we direct the surgical treatment of open fractures, apart from the orthopedic treatment, is the transformation of an open fracture into a closed fracture. In joint wounds our results show the superiority of immediate suture, closing the joint cavity after wide arthrotomy, over any other method of treatment. In wounds of the elbow and shoulder, however, the Carrel treatment followed by secondary suture or by cicatrization by second intention is evidently indicated.

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EDITORIAL

AMERICAN INTELLIGENCE

We consider ourselves particularly fortunate in being able to offer our readers the paper entitled The Measure of Mentality by Dr. Sweeney. While not on a strictly medical subject, the paper should be interesting to everybody and particularly at this time in our national history. The views of the author on the various practical applications of the method of measuring intellect will naturally call forth considerable discussion. Some of these applications will undoubtedly be adopted in time but as the author points out, progress in general is a very slow process.

While the author lays stress on the fact that the Binet psychological test is primarily a test of inborn intelligence it would be disheartening to believe that our lives are as largely dependent on our inherited make-up as the author implies. Just as his figures show that illiterates and foreigners are rated in larger percentage below the average and below those better educated, we are encouraged to believe that education and study may largely overcome natural mental handicap. Of course it must be considered that the converse is undoubtedly true, namely that the more native intelligence an individual has the easier education is acquired. Naturally then, the better educated an individual, the higher he would be rated in an intelligence test.

It is appalling to think that the average adult has a mental age of twelve. Would it not be truer to state the converse of this—that the average adult is rated at the age 12 by this system. The proposition is not so discouraging when we realize that the adult cannot be rated above 16 to 18 years.

The opinion has been expressed by some who have observed how the intelligence tests were conducted at the various camps, that conclusions based on reports of the army psychiatric examiners must be formed with reservations. The mental response of the new recruit, in certain sections of the country, drafted largely from rural districts, whence he had been rudely summoned by the call to arms, must be justly allowed for. He was roughly put through the mill, examined, vaccinated, inoculated, reprimanded at every turn for failure to act the soldier, and then herded into a room with a lot of others to have his intelligence tested. In many cases the test was conducted by a non-com. Is it to be wondered that in many cases he was completely flabbergasted, and rated low in the scale?

Further light has been thrown on the work of the psychiatric examiners by Dr. Ball in a paper recently read before the State Medical Association in Minneapolis.

Dr. Bailey, in an address given before the Minnesota Neurological Society also called attention to the large number of nervous and mental defectives in the recent draft. He stated that there were 40,000 men discharged from the United States Army because of nervous and mental conditions, a number equivalent to such defectives in the states of Massachusets and New York. This figure does not include those rejected by the draft boards. Of the 40,000, 10,000 were discharged for psychiatric incompetency. Only 3 per cent of the total number were alcoholic addicts, a surprisingly small per cent, and an equal percent was discharged for drug addiction.

Intelligence of course is not the all important factor in a man's mental make up. The qualities of judgment dependent on education and experience, and moral qualities so dependent on training and environment are fully as important in the make up of a good citizen as pure intelligence. A man who measures up to age 12 and yet has adult judgment is a more

desirable citizen than a clever crook rated among the uppermost 15 per cent.

It would undoubtedly be well to try out candidates for higher education with a psychological test. It would also be well to consider other mental qualities at the same time. No systems of examination of moral qualities or mental balance have as yet been discovered but these qualities could very well be considered in selecting candidates for various callings.

Along with higher education today as President Hadley of Yale pointed out in his recent matricultion sermon, should go a kind of education not simply cultural, not simply vocational but one that trains the individual to judge and choose the things relatively most worth while from a moral standpoint.

As the author points out, where the most intelligent individuals in a community who as a rule compose the governing and influential group, have good moral qualities and by this is meant the Christian ideals of sacrifice of personal interest for the other fellow, individually or in groups, happy is that community. If these moral qualities are lacking what is to prevent exploitation of the less intelligent?

Thus the importance of moral training in home and school and this training should be according to the very best moral teaching we know—the Christian.

We cannot but deplore the view point so often expressed, of the justice of each man acquiring all of this world's goods he can—that is, that his intelligence will allow him. Has the man then who knows how to obtain a monopoly the right to his millions? It is just this lack of moral tempering in the most intelligent and ruling class that causes much of a justifiable social unrest which is in evidence so strongly today and which threatens even the countries with a longer standing experience with democracy.

THE CHIROPRACTIC ACT

Chiropractic is a name given to the study and application of a universal philosophy of biology, theology, theosophy, health, disease, death, the science of the cause of disease and art of permitting the restoration of the triune of relationships between all attributes necessary to normal composite forms; to harmonious qualities and equalities by placing in juxtaposition the abnormal concrete positions of definite mechanical portions with each other, by hand; thus correcting all subluxations of the spine, atlas to coccyx inclusive, for the purpose of permitting the currents, through nerves that were formerly not permitted to be transmitted, through impingement, but have now assumed their normal size and capacity for conduction as they emanate through intervertebral foramina—the expressions of which were formerly excessive or partly lacking-named disease.

Now we know what Chiropractic is. The definition is given by the promoter of the art and science and so must be reliable. What an absurd attempt to make an impression through this hyperbolic definition of what claims to be, not simply an art and science but a universal philosophy of theology.

When one considers that the entire practice is founded on the assumption merely that spinal nerves are impinged as they pass through the intervertebral foramina, not sufficiently to cause areas of paralysis or disturbed sensation but just enough to interfere with those "currents of cycles of mental impulses," there seems to be little if any excuse for its existence.

The whole proposition is the more absurd in that the attempt is made to palpate slight subluxations of the vertebrae—in many cases the smallest fraction of an inch and then—mirabile dictu—the attempt is actually made to relieve the pressure by correcting through manipulation the supposed minute deformity.

Orthopedics recognizes the importance of correct posture, particularly as applied to the spine. Physiology recognizes the importance of nerve impulses to the entire body. But where is there sufficient proof of this impingement theory to warrant such a concentration upon this alleged common abnormality.

And yet there are over 9,000 chiropractors in the United States and over 1,300 students enrolled annually. And all this has developed practically since the year 1903 when B. J. Palmer, D. C., Ph. C., the son of Dr. D. D. Palmer the original Chiropractor, began to spread the doctrine.

Minnesota has recently followed the questionable example of Connecticut, Nebraska, Kansas, North Dakota, Oregon, Arkansas and New

York and passed a bill recognizing and licensing chiropractors.

There is nothing in the bill definitely barring from practice the host of individuals who, with no educational ground work have taken a short course in chiropractice of one to three months and are masquerading as doctors. They apparently will all be licensed providing they have practiced for a period of six months.

Although therapeutically, these doctors may limit themselves to the spinal nerves, they are diagnosing and caring for a variety of diseases. Our vital statistics are of much less value, now that death certificates are being signed by D. Cs.

It is considered by some that it is beneficial for asses to lie down and roll. Next we will have a bill licensing The Holy Rollers.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA ACADEMY OF MEDICINE. NOVEMBER MEETING, 1919.

After the usual dinner the members assembled in the grill-room of this club for the third meeting of the year. Dr. H. B. Sweetser presided. The minutes of the last meeting were read and approved.

Three clinical cases were reported by Dr. Farr, after which the retiring president, Dr. Christison, gave his address. The Medical Aspects of School Life, with special Reference to Work accomplished among Defective Pupils, was the theme he chose to discuss.

Dr. E. L. Gardner followed with his inaugural thesis, A Clinical Study of Basal Metabolism.

Twenty-three members and two visitors were in attendance.

DR. FARR'S CASES.

One was of a boy nine years old who was struck by the fender of an automobile and seriously hurt. The accident occurred at noon; no external marks of injury. The boy was dazed and unable to walk, however. Two hours later he was seen again by a physician who pronounced the injury not serious. At 8 o'clock that evening he grew suddenly pale. A physician was called and the boy taken to the hospital immediately. Dr. Farr did not see him until eleven. The pulse was gone, the pupils dilated, and the patient gasping for air. Apparently he was dying. Taken to the operating room, he was surrounded with heat and give 300 c. c. of blood at once, without stopping to test the donor. 900 c. c. of normal saline was also given. Meanwhile the abdomen was opened under novocaine and search made for the lesion. Much blood escaped from the cavity, and it was only after considerable time that the point of injury was located. It proved to be a rupture of the liver, extending into the peritoneal cavity. The wound was packed with gauze and the abdomen rapidly closed. Before the operation was over the pulse became perceptible and at the end was fairly strong. Two assistants and the donor remained at the hospital and were called upon to tranfuse 300 c. c. more blood during the night. Seven days later (at the time of this report) the boy was doing well.

The second case was that of a woman on whom Dr. Farr performed hysterectomy and appendectomy twelve years before. She entered the hospital early in November, complaining of great tenderness in the right side of the abdomen. Much distended; pulse, 120; temperature, 102; leucocytes, 7,200. The X-ray showed no free gas in the peritoneal cavity. Probable diagnosis, perforation of a typhoid ulcer. Under novocaine, the abdomen was opened through a McArthur incision and the cecal region explored. The trouble was found to be due to a heavy band of adhesions which obstructed the ascending colon. The adhesions were divided and the abdomen closed. Pain was entirely relieved, the bowels acted freely in a few hours, and the patient made a good recovery.

A third case was that of a man 84 years old who complained of urinary retention and periodic pain in the region of the bladder. Prostatic obstruction was diagnosed and a suprapubic cystotomy performed. The bladder was found completely filled with small stones, resembling in size and shape puffed rice. There were as many as 1,200 or 1,500 of them. In fact the bladder wall was so studded with them that it was impossible to say if they were all removed. Only the central lobe of the prostate was excised. The defect was closed over with mucous membrane and a tube left in for drainage.

—F. E. LEAVITT.
Secretary.

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY.

The 34th annual meeting of the South Western Minnesota Medical Society met at Luverne November 13th.

The meeting was called to order by the Vice President, Dr. E. G. McKeowen of Pipestone. There was a fairly good attendance and a most interesting program.

The following officers were elected for the ensuing year.

President, Dr. E. G. McKeowen, Pipestone, Minn.

Vice President, Dr. F. W. Metcalf, Fulda, Minn.

Secretary, Treasurer, Dr. F. G. Watson, Worthington, Minn.

Dr. F. R. Weiser, was re-elected Censor for three years from Cottonwood County.

Dr. L. A. Williams, Censor for three years from Murray County.

Two Minneapolis physicians presented very interesting papers, Dr. John O. Taft on "Syphilis" and Dr. Max Seham on "Differential Diagnosis" of Heart Murmurs in Children."

Dr. J. G. Parsons of Sioux Falls read a very practical paper on The Running Ear.

State Sanitary Conference, Lowry Building, St. Paul, Minn., Dec. 9th, 1919.

The following is the program of subjects which were informally discussed by the County Health Officer, who suggested the subject, and others present:

The Control of Venereal Diseases in Country Districts. Suggested by Dr. L. Soggee, Cottonwood County. Discussion by Dr. H. G. Irvine, Director, Div. of Venereal Diseases.

Securing Municipal Sanitary Regulations and Ordinances. Suggested by Dr. F. M. Smersh, Steele County.

The Annual Spring Clean Up—as a Medical Officer's Duty. Suggested by Dr. L. N. Klove, Health Officer.

County and Local Health Officers—Appointment, Duties and Compensation. Suggested by Dr. H. M. Workman, Health Officer. Dr. J. M. Rains, Health Officer. Discussed by Dr. E. H. Bayley, Wabasha County, Dr. B. F. Van Valkenburg, Health Officer.

The County as a Health Unit. Suggested by L. W. Feezer. Discussed by Dr. J. E. Rheim, Kanabec County.

Disinfection. Suggested by Dr. A. M. Ridgway, Wright County. Discussed by Dr. E. H. Bayley, Wabasha County.

Compulsory Care of Tuberculosis. Suggested by Dorothy Motl, Red Cross Nurse. Discussed by Josephine Creelman, R. N. Extension Div. U. of M. Dr. S. L. Leonard, Redwood County; Elizabeth Sprague, Div. of Tuberculosis, Mpls.

Control of and Expenses of Control of Communicable Diseases. Suggested by O. W. Anderson, County Auditor, Travers County. Discussed by O. C. Pierson, State Board of Health; Dr. H. W. Hill, Ex. Sec. Minn. State Public Health Ass'n.

Control of Communicable Diseases in Schools—Powers and Duties of Local Board of Health and Boards of Education. Suggested by Dr. E. A. Shannon, Health Officer. Discussed by Dr. E. H. Bayley, Wabasha County; Emma Bunge, Visiting Nurse.

The County, Municipal and School Nurse. Suggested by Frances V. Brink, Supt. of State Nurses. Discussed by Anna Weum, Dept. of Nursing N. D. Red Cross; Emma Rood, Northern Div. Red Cross; Josephine Creelman, Extension Div. U. of Minn.

The Control of Diphtheria Carriers. Suggested by Dr. H. C. Doms, Murray County.

The Municipal Milk Problem. Suggested by Dorothy Motl, Public Health Nurse. Discussed by Dr. W. F. Bleisfuss, Rochester.

Stream Pollution. Suggested by H. A. Whittaker, Director, Div. of Sanitation.

The following officers were elected for the ensuing year: president, Dr. W. F. Bleisfuss, Health Officer, Rochester; vice president, Dr. G. E. Page, Health Officer, Sherburne county; secretary, Dr. C. E. Smith, Jr., Executive Secretary of State Board of Health.

This State Sanitary Conference is primarily a conference of the county health officers, which is provided for by law. All those interested in public health activity including particularly all city health officers and public health nurses are invited to attend the annual meeting.

At the meeting held Dec. 9th, 1919, a committee composed of Dr. E. H. Bayley, Wabasha county; Dr. M. M. Hauge, Yellow Medicine county and Dr. B. Van Valkenburg, Todd county, all County Health Officers was appointed to make a report at the next conference regarding legislation with the view of adopting the county instead of the township or city as the public health unit and employing the services of a full time physician for each county or group of counties.

TWENTY-FOURTH SEMI-ANNUAL SESSION OF THE SIOUX VALLEY MEDICAL ASSOCIATION

Sioux City, Iowa.

Wednesday and Thursday, January 21 and 22, 1920.

Headquarters and Sessions at Hotel Martin

OFFICERS

A. E. Spalding, M. D., Luverne, Minn., President.
E. A. Jenkinson, M. D., Sioux City, Iowa, First Vice President.
T. J. Billion M. D., Sioux Falls S. D., Second Vice President.
J. A. Dales, M. D., Sioux City, Iowa, Secretary.
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COMMITTEE OF ARRANGEMENTS

William Jepson, M. D., Sioux City, Iowa.
C. P. McHugh, M. D., Sioux City, Iowa.
I. E. Nervig, M. D., Sioux City, Iowa.

PROGRAM

Wednesday, January 21, 1920

Morning Session, 9:00 o'clock

Calling of the meeting to order by the Chairman of the Committee of Arrangements.
Reading of the minutes of the previous Meeting.
Report of the Committee of Arrangements.
Report of the Treasurer and Standing Committees.
New Business.

PRESENTATION OF PAPERS

J. E. Reeder, M. D., Sioux City, Iowa—"Epidemic Mastoiditis."

R. M. Waters, M. D., Sioux City, Iowa—"Accidents During Anaesthesia."

C. R. Mullong, M. D., Norfolk, Nebr.—"Blood Transfusion and the Results that may be Expected."

Albert F. Tyler, M. D., Omaha, Nebr.—"The Injection of Gas into the Peritoneal Cavity for Diagnosic and Therapeutic Purposes."

F. S. Clark, M. O., Omaha, Nebr.—"Results of Some Experimental Work with the use of Sodium Cacodylate on Athreptic Infants."

Wednesday, January 21, 1920

Afternoon Session, 1:30 o'clock

Edward M. Williams, M. D., Sioux City, Iowa.—"Consideration of Endocrine Influences."

D. T. Quigley, M. D., Omaha, Nebr.—"Etiology of Cancer."

G. G. Cottam, M. D., Sioux Falls, S. D.—"The Problem of the Infirm Prostatic."

J. E. Summers, M. D., Omaha, Nebr.—"The Acute Abdomen, with Special Reference to Intestinal Obstruction."

Samuel C. Plummer, M. D., Chicago, Ill.—"Surgical Shock."

J. P. Lord, M. D., Omaha, Nebr.—"The Preservation of Function in Joints after Fractures."

F. J. McAllister, M. D., Hawarden, Iowa.—"Wound Repair."

Wednesday, January 21, 1920

7:00 P. M.

Banquet at Hotel Martin followed by addresses.

Colonel P. M. Culler, M. C., U. S. A., Hot Springs, Arkansas—"Medical Memories of the War."

Donald Macrae, Jr., M. D., (Late Colonel, M. C., U. S. A.) Council Bluffs, Iowa—"Who Won the War."

Followed by toasts and addresses by other prominent members of the profession.

Thursday, January 22, 1920

Morning Session, 9:00 o'clock

R. F. Bellaire, M. D., Sioux City, Iowa—"Value of the Fluoroscope in Gastro-Intestinal Diagnosis." Illustrated by lantern slides.

F. J. Plondke, M. D., St. Paul, Minn.—"Vaginal Drainage." Illustrated by lantern slides.

W. H. Mick, M. D., Omaha, Nebr.—"Similarity of Emergency and Military Roentgenology."

W. E. Wolcott, M. D., Omaha, Nebr.—"X-Ray Interpretation of Bone and Joint Pathology." Illustrated by lantern slides.

E. G. McKeon, M. D., Pipestone, Minn.—"Unusual Case."

Thursday, January 22, 1920

Afternoon Session, 1:30 o'clock

G. C. Moorehead, M. D., Ida Grove, Iowa.—"Head Colds."

J. P. Dougherty, M. D., Sioux City, Iowa—"The Polya Operation with Report of Case."

J. G. Parsons, M. D., Sioux Falls, S. D.—"Myasthenia Gravis."

J. C. Hay, M. D., Laurel, Nebr.—"Diagnosis and Obstetrical Management of Breech Delivery."

The original stethoscope was devised by Laennec a Frenchman and consisted of a hollow wooden tube. He conceived the idea while watching some children playing in the gardens of Louvre listening to the transmission of sound along pieces of wood.

As we know any kind of stethoscope simply excludes extraneous sounds while providing a column of air for the transmission of vibrations.

The old type mon-aural wooden stethoscope is still largely used in European clinics. It is particularly adapted to the auscultation of fetal heart sounds but is lacking for general use because of its shape, and because both ears are not used.

OF GENERAL INTEREST

Dr. Edward Ohare of Milroy has located in Watkins.

Dr. G. L. Atkins of Estherville, Iowa will locate in Jackson.

Dr. Walter Halloran of St. Paul has located at Jackson.

Dr. John Abbott has moved to 846 Lowry Bldg., St. Paul.

Dr. W. F. Cobb formerly of Lyle has moved to Northfield.

Dr. H. E. McKibben formerly of Hector has located in St. Cloud.

Dr. Stewart Anderson, who recently returned from service has located at Wells.

Dr. H. J. Shelver of Appleton is taking a post graduate course in Chicago.

Dr. W. J. Kucera, recently discharged from the army has located at Hopkins.

Dr. C. M. Robilliard of Faribault is taking a post graduate course in New York.

Dr. J. J. Donovan has returned from service in France and has returned to Litchfield.

Dr. A. E. Amundsen of St. Paul has associated himself with Dr. E. E. Hall of Little Falls.

Dr. Harry Brown of Duluth will move to Bowerville and be associated with Dr. Gardner.

Dr. O. H. Urstad has sold his practice and hospital to Dr. Arthur Henderson of Minneapolis.

Dr. G. A. Larsen will move to Minnesota and be associated with Drs. F. M. and J. F. Smersh.

Dr. and Mrs. E. P. Hawkins of Montrose have gone to Florida where they will spend the winter.

Dr. E. G. Nylander of Maiden Rock, Wis., has associated himself with Dr. N. A. Nelson of Dawson

Clarissa, Minn. wants a good Doctor, Dentist and a Pharmacist to locate there. Write Frank Fimon at Clarissa.

Dr. M. C. Guthrie is now district supervisor of the United States Public Health Service at 744 Lowry Bldg., St. Paul.

Dr. H. W. Meyerding will be away from the Mayo Clinic for about a month on a clinical trip to Boston and New York.

Dr. Frank W. Spicer has announced his return from the army and has resumed practice at 500 Fidelity Bldg., Minneapolis.

Dr. J. F. Avery has returned from service in the army and has resumed his practice at 1020 Donaldson Bldg., Minneapolis.

Dr. Russell Wilder of Chicago has accepted a position in the Mayo Clinic as an associate in the Division of General Medicine.

The Faribault Clinic was formerly opened No-

vember 1st by Drs. W. H. Rumpf, F. U. Davis, C. J. Plonske, C. M. Robilliard and W. H. Robilliard.

Dr. L. M. Boyd of Alexandria has returned from service in the army and has resumed his practice which is limited to eye, ear, nose and throat.

Dr. J. C. Michael has resumed civil practice and announces the opening of his offices at 527 La Salle Bldg., Minneapolis. He will limit his practice to nervous and mental diseases.

Dr. Thomas Magath, recently an instructor in anatomy in the College of Medicine of the University of Illinois has gone to the Mayo Clinic as assistant in parasitology and bacteriology.

Dr. Hempstead, who left the Mayo Clinic last April after working in Dr. Lillie's section for about a year, has returned as a member of the permanent staff in the section on Ear, Nose and Throat.

Thru an error the Necrology report of the Minnesota State Medical Association reported the death of Dr. C. M. Oberg of Minneapolis. Dr. Oberg's name was confused with that of Dr. C. Oberg a former dentist of Minneapolis.

Dr. Geo. W. Beach, formerly superintendent of the Minnesota State Sanitorium, Cass County, Minnesota, and recently returned from army service has been appointed Chief of Medical Activities under the Serbian Relief Committee of American.

A laboratory position preferably with some doctor in the Twin Cities is desired by Miss Jessie Porter, B. A., 1636 Thomas St., St. Paul. Laboratory training in the technique of blood and urine examination and in basal metabolism has been had at the University Hospital.

Dr. H. H. Holm, formerly assistant City Physician of Minneapolis, has associated himself in the practice of medicine and surgery with Dr. O. G. R. Freed of Cokato. Drs. Freed and Holm have purchased the Cokato Hospital and will conduct a nurses training school under the direction of Miss Blanche Rucker, R. N. the Superintendent.

Captain Everett C. Hartly of Carver, Minn., is chief of the American Red Cross Unit at the large refugee camp at Baranowizce in Poland. This camp is doing important work in caring for refugees sick with contagious diseases and who are now returning in large numbers to Poland. The hospital and disinfecting plants play an important part in helping to combat epidemic disease such as typhus, cholera and dysentery, which are playing such havoc in this part of Poland.

Dr. Hartly reports some alleviation of the situation accompanying the recent much needed improvement in his hospital equipment.

The members of the Association of the Resident and Ex-resident Physicians of the Mayo Clinic at a business meeting, Wednesday afternoon, October 8th, elected the following officers: President, Dr. C. G. Toland, Los Angeles, Cal.; vice-president, Dr. Guy Aud, Louisville, Ky.; secretary, Dr. H. L. Foss, Danville, Pa.; treasurer, Dr. A. H. Sanford, Rochester, Minn.; board of governors, Dr. W. F. Braasch, Dr. E. S. Judd and Dr. D. C. Balfour.

NEW AND NON-OFFICIAL REMEDIES

During November the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Nonofficial Remedies:

Nonproprietary Articles:
Neocinchophen.

Calco Chemical Company:
Neocinchophen-Calco.

Hollister-Wilson Laboratory:
PITUITARY SOLUTION-Hollister- Wilson.
Ampules Pituitary Solution-Hollister-Wilson.

Pure Gluten Food Co.:
Hoyt's Gluten Special Flour.

Van Dyk and Company:
Benzyl Benzoate for Therapeutic Use—Van Dyk and Co.

Winthrop Chemical Co.:
LUMINAL.
Luminal Sodium.
Luminal Tablets.

Albutannin—Tannin Albuminate Exsiccated.—A compound of tannin and albumin, thoroughly exsiccated and containing about 50 per cent of tannic acid in combination. It was first introduced as tannalbin. The use of albutannin is based on the assumption that the tannin compound passes the stomach largely unchanged and thus the astringent action will be exercised in the intestine where the compound will be decomposed by the intestinal fluid, slowly liberating the tannic acid. Albutannin is used in diarrhea, particularly in that of children, and in phthisis.

Albutannin-Calco.—A nonproprietary brand complying with the standards for albutannin. The Calco Chemical Co., New York.

Albutannin-Merck.—Merck and Co. have adopted the name albutannin for the product accepted as tannin albuminate exsiccated—Merck (see Supplement to New and Nonofficial Remedies, 1919, p. 12) (Jour. A. M. A., Nov. 1, 1919, p. 1363.)

Acetannin—Tannyl Acetate.—The acetic acid ester of tannin.—Acetannin was first introduced as tannigen. Acetannin is claimed to be practically nonirritant to the stomach and to pass unchanged into the intestine, there to become effective as an astrigent. It is used in diarrheal affections.

Acetannin-Calco.—A brand of acetannin complying with the standards of New and Nonofficial Remedies. The Calco Chemical Co., New York.

Antipneumococcic Serum, Combined Types I, II and III-Gilliland.—Prepared by immunizing horses

with dead and living pneumococci of the three fixed types and standardized against Type I culture. Marketed in 50 Cc. gravity injecting packages and also in 50 Cc. and 100 Cc. vial packages. The Gilliland Laboratories, Ambler, Pa. (Jour. A. M. A., Nov. 8, 1919, p. 1442.)

Tablets Cinchophen-Abbott, 7½ Grains.—Each tablet contains 7½ grains of cinchophen-Abbott. Cinchophen was first introduced as atophan and is in the U. S. Pharmacopeia as Acidum phenylcinchoninicum. The Abbott Laboratories, Chicago.

Acriflavine and Proflavine.—These are dyes derived from acridine, a base found in coal tar. Their use in medicine is proposed on the claim that they have high antiseptic power, together with comparative freedom from toxic or irritant action and without inhabiting effect on the phagocytic action of leukocytes or on the healing process. They have been used as wound antiseptics, and acriflavine has also been proposed for the treatment of gonorrhea. The reports on the value of the two preparations are contradictory and conflicting. In the treatment of wounds, solutions of 1:1,000 in physiologic sodium chloride solution are commonly recommended. In gonorrhea, a strength of 1:1,000 in physiologic sodium chloride solution is used for an injection into the urethra, and weaker solutions have been used for lavation.

Acriflavine.—This is 3:6 diamino acridine sulphate. For a discussion of the actions, uses and dosage, see above. Acriflavine is a brownish-red, odorless, crystalline powder, soluble in less than two parts of water and in alcohol, forming dark red solutions which fluoresce on dilution. It is nearly insoluble in ether, chloroform, liquid petrolatum, fixed oils and volatile oils.

Proflavine.—This is 3:6 diamino acridine sulphate. For a discussion of the actions, uses and dosage, see the preceding article, Acriflavine and Proflavine. Proflavine is a reddish-brown, crystalline powder. It is soluble in water and alcohol, forming brownish solutions which fluoresce on dilution. It is nearly insoluble in ether, chloroform, liquid petrolatum, fixed oils and volatile oils (Jour. A. M. A., Nov. 8, 1919, p. 1443.)

Pituitary Solution-Hollister-Wilson.—Liquor Hypophysis.—A sterilized solution of the water soluble extract of the posterior portion of pituitary glands of cattle, preserved by the addition of chlorbutanol. It is standardized according to the method of Roth and complies with the U. S. P. standard. The Hollister-Wilson Laboratories, Chicago.

Ampoules Pituitary Solution-Hollister-Wilson 1 Cc.—Each ampoule contains pituitary solution-Hollister-Wilson 1 Cc. (Jour. A. M. A., Nov. 29, 1919, p. 1699.)

PROPAGANDA FOR REFORM

Pinoleum.—A postcard advertising Pinoleum implies that Alexander Lambert, President of the American Medical Association endorses this nostrum. Dr. Lambert has never used the Pinoleum products, and protests against the dishonest method of advertising them. Pinoleum has long been advertised to the public via the medical profession. Its life history is that of the typical nostrum. Epidemics are utilized as opportunities for pushing the product. As the Pinoleum Company now misuses the name of Dr. Lambert, so it made the false use of the name of Dr. George W. McCoy, of the U. S. Public Health Service (Jour. A. M. A., Nov. 1, 1919, p. 1380.)

Lavoris.—In recent years, Lavoris has been widely advertised as "THE IDEAL ORAL ANTISPETIC", particularly to the dental profession. In 1913, a card was sent out according to which each pint of Lavoris contained zinc chloride, 1,040; resorcin, 0.520; menthol, 0.400; saccharin, 0.195; formalin, 0.195; cl. cassia zeyl., 0.780; cl. caryophyl., 0.195. Advertisements now appearing repeat the "formula", except that resorcin is omitted. The formula is indefinite and misleading in that no denomination of weight is given for the various constituents. Analysis in the A. M. A. Chemical Laboratory demonstrated that the Lavoris now sold contains no resorcin and that the zinc content is equivalent to 0.1 gm. per 100 Cc. (about ½ grain to the ounce.) As the analysis shows that the "formula" is not only meaningless because no demonination of weight is given, but that the zinc content is inaccurate for any denomination which might be assumed, the Council on Pharmacy and Chemistry declares the composition of Lavoris essentially secret. The Council also reports that Lavoris is advertised to the public indirectly with claims that are unwarranted and objectionable from the standpoint of public safety. Further, the Council reports that the name is objectionable in that it does not indicate the composition or potent ingredients of the mixtures and that the composition is irrational in that the user is likely to ascribe a false and exaggerated value to it. (Jour. A. M. A. Nov. 1, 1919, p. 1380.)

Olive Oil As A Laxative.—In order that digestible oils may act as laxatives, it is necessary to give more than can be digested and absorbed. In the case of an infant, this may be one or more teaspoonfuls daily, beginning with small dosages and increasing them until the desired effect is obtained. For adults, one or two tablespoonfuls may have to be given three times daily, either an hour before meals or two hours after meals. Olive oil may be taken mixed with hot milk or floating in fruit juice. Olive oil might be particularly serviceable in spastic constipation in an emaciated individual. The use of olive oil as a laxative would be contraindicated in obesity, diabetes, gastric atony and in hypochlorhydria, as well as in those inclined to biliousness (Jour. A. M. A., Nov. 8, 919, p. 1441).

Some More Misbranded Nostrums.—The following preparations have been found to be misbranded under the federal Food and Drugs Act: Fruitatives,

sold under the false claims that the laxative properties were due to the fruit extract; Tubbs' Bilious Man's Friend, a water-alcohol solution of sugar and plant extractives (rhubarb) with a very small amount of aromatics Deerfield Water, consisting in part of a filthy, decomposed and putrid animal and vegetable substance; Mederine, a water-alcohol solution of sugar, potassium iodide, methyl salicylate, salicylic acid, glycerin and laxative plant extractives, and Robinson Springwater, falsely claimed to be effective in Bright's disease diabetes, gout, rheumatism, indigestion, etc. (Jour. A. M. A. Nov. 8, 1919, p. 1458).

Acriflavine and Proflavine.—Tentative descriptions and standards for acriflavine and proflavine are published in New and Nonofficial Remedies for the information of manufacturers, pharmacists and physicians. In view of numerous inquiries regarding the therapeutic properties of these dyes which have been received by the Council on Pharmacy and Chemistry, the Council has prepared an abstract of the available literature on the subject. From this review, it is evident that the use of the dyes is in the experimental stage and that their value cannot be definitely judged. Of the thirty-four reports which are abstracted, twenty-five may be considered as favorable; seven are distinctly unfavorable and two are in the doubtful class (Jour. A. M. A., Nov. 15, 1919, p. 1542).

Medinal.—Medinal is a proprietary name applied to barbital sodium (sodium diethylbarbiturate), the sodium salt of barbital (diethylbarbituric acid, first introduced as veronal). The Council on Pharmacy and Chemistry reports that Medinal was omitted from New and Nonofficial Remedies in 1916 because the advertising issued by Schering and Glatz (who then acted as agents for the Berman manufacturer) contained misleading and unwarranted therapeutic claims. The Council further reports that Medinal, said to be manufactured in the United States, is now marketed by Schering and Glatz, Inc., but that the claims which are made for it are still unwarranted and prevent the acceptance of it for New and Nonofficial Remedies (Jour. A. M. A., Nov. 15, 1919, p. 1542).

Phylacogens.—A circular letter devoted to singing the praises of "Pneumonia Phylacogen" contains this: "Pneumonia Phylacogen has been found to be a dependable means of preventing and treating pneumonic complications of Influenza. In one large city it became a routine measure to give all persons affected with Influenza an injection of Pneumonia Phylacogen as a prophylactic of pneumonia. The results were remarkable. Not only did the cases improve rapidly but in a majority of them the pneumonia did not occur." The injection of Phylacogens is simply the administration of a mixture of the filtered products of several bacterial species. The results that follow represent the reaction of the bacterial proteins—a reaction for good or evil. There is no scientific evidence to show that they possess any specific prophylactic virtue. To recommend their use in patients with influenza, as a prophylactic against pneumonia, is unwarranted; and the physician who acts on the advice of the manufacturer must assume the responsibility of the results. In case of mishap, he cannot fall back on the manufacturer. He will find no scientific evidence to support him (Jour. A. M. A., Nov. 15, 1919, p. 1442).

Vaccines in Influenza.—The efficacy of vaccines in preventing influenza or of preventing or decreasing the severity of secondary infections is unproved. In view of the varying preponderance of the different organisms isolated from influenza cases, it is evident that even if a certain mixture is found efficacious in one locality, it may not be effective in another. Thus far, hope and imagination have exceeded scientifically controlled facts. Many vaccines come highly recommended by their manufacturers; but very little dependable evidence is submitted to show how much, if at all, the patient will profit therefrom (Jour. A. M. A., Nov. 15, 1919, p. 1544).

The Eli Products of Eli H. Dunn.—Physicians are receiving advertising matter from a concern that seems to operate under various names, such as "E. H. Dunn and Co.," "Eli H. Dunn," "Eli Laboratory," etc. The concern is located in Kansas City, Mo. It advertises "Eli 606 Capsules," "Eli Vaginal Capsules," "Eli 'Vim' Restorative," and an intravenous nostrum, "Ampules Eli Venhydrarsen." "Dunn's Intravenous and Restorative Treatment" is advised for the treatment of hysteria, and a price to the patient of three hundred dollars is suggested. The gross commercialism that permeates the advertising again illustrates the fact that the fad for intravenous medication offers an attractive field for those who would exploit our profession (Jour. A. M. A., Nov. 22, 1919, p. 1628).

Cotarnin Salts (Stypticin and Styptol).—The Council on Pharmacy and Chemistry announces the omission of cotarnin salts (Stypticin and Styptol) from New and Nonofficial Remedies. Salts of the base cotarnin have been used as local and systemic hemostatics. The hydrochloride was first introduced as "Stypticin" and is now in the pharmacopoeia as cotarnin hydrochloride. The phthallic acid salt of cotarnin—cotarnin phthallate—was introduced as "Styptol." In 1918, Stypticin was omitted from New and Nonofficial Remedies because the former American agents were no longer offering it for sale. Styptol was retained and is described in N. N. R., 1919. As was pointed out in the description (N. N. R. 1919), the evidence for the usefulness of the cotarnin salts has been contradictory and unstaisfactory. Now P. J. Hanzlik has made a thorough investigation of the efficiency of hemostatics and has shown the inefficiency of cotarnin salts. The evidence was so definite that the Council has directed the omission of the general article on cotarnin salts and the des-

cription of Styptol from New and Nonofficial Remedies (Jour. A. M. A., Nov. 22, 1919, p. 1628).

URI-NA Test.—The URI-NA Test, sold by the Standard Appliance Co., Philadelphia, bears a strong family resemblance to Capell's Uroluetic Test. Both are said to permit the detection of syphilis by an examination of urine. There is no method known at the present time by which the absence or presence of syphilis can be determined by a simple color test of the urine (Jour. A. M. A., Nov. 22, 1919, p. 1630).

Micajah's Wafers and Micajah's Suppositories.—The Council on Pharmacy and Chemistry reports that "Micajah's Medicated Wafers" formerly called "Micajah's Medicated Uterine Wafers") and "Micajah's Suppositories," sold by Micajah and Co., Warren, Pa., are inadmissible to New and Nonofficial Remedies because: (1) their composition is essentially secret; (2) the name of neither of these mixtures is indicative of its composition; (3) of unwarranted and exaggerated therapeutic claims, and (4) the therapeutic advice which accompanies the trade packages constitutes an indirect advertisement to the public. The "wafers" were analyzed in the A. M. A. Chemical Laboratory in 1910 and found to consist essentially of dried ("burnt") alum, boric acid and borax. The suppositories were recently examined in the A. M. A. Chemical Laboratory and, like the "wafers," were found to contain alum, boric acid and borax—and these substances practically alone—incorporated in cocoa butter. The company claims that "to these have been added Ammoni Ichthyosulphonate, Balsam of Peru, Ext. Belladonnae." The A. M. A. chemists report, however, that if extract of belladonna is present at all, it is in amounts too small to be detected by the methods commonly employed in the chemical examination of alkaloidal drugs.

The chemists report further that while ammonium ichthyosulphonate and balsam of Peru both have a decided odor and a dark color, the suppositories have but little color, and the odor of cocoa butter which forms their base is not covered by these drugs. Obviously, therefore, if ammonium ichthyosulphonate and balsam of Peru are present at all, the amounts are utterly insufficient to exert any therapeutic effect (Jour. A. M. A., Nov. 29, 1919, p. 1715).

PROGRESS IN MEDICINE AND SURGERY

THE NUTRITION OF THE FETUS. J. Morris Slemons. (Am. Jour. of Obs. Vol. LXXX, No. 2).

During the early months of pregnancy there is no maternal gain in weight, in fact often a loss, but the gain in the later months is marked and for the last three months it is as much as 3½ to 5½ pounds per month, the total gain being on the average about 30 pounds. This increase is due in part to the weight of the fetus, placenta, amniotic fluid and the breasts, but also to a general increase in all body tissues due to the stimulus of pregnancy.

From data, experiments and observations we are forced to the conclusion that the state of pregnancy, for the monther, is not one of sacrifice of body tissues. Experiments on dogs and rabbits, with elaborate analyses of food and excreta, show that a notable storage of food stuffs is characteristic of pregnancy. If this food storage is compared with the material in the tissues of the young, it appears that the mother's food is sufficient to meet her own demands and that of fetal development as well. Wilson, conducing similar experiments in human pregnancy comes to the conclusion that the *ordinary* diet provides for all the requirements of fetal growth and permits of maternal storage besides.

It is safe to presume that there is no great difference between the fetus and the adult so far as the food requirements are concerned, both using the same organic and inorganic substances which are always available in the blood of the mother.

The mother's blood contains nutrient nitrogenous substances, carbohydrates, fats, oxygen, water and inorganic salts which meet all the requirements of tissue growth and energy production; but, owing to the barrier place at the placenta, none of them pass directly from mother to fetus.

The question as to how substances pass through this placental barrier has given rise to two antagonistic hypothetical theories. The VITALISTIC theory which gives the chorionic villae an active part in the placental interchange. The MECHANISTIC theory gives this placental barrier the passive role of a semi-permeable membrane.

Gusserow has established the fact that so long as the placenta is normal no insoluble substance may pass it. Even the elements of the blood are confined to that circulation in which they originate and for this reason the child of a leukaemic mother presents a normal blood picture. This also holds true in the experiment of injecting insoluble medicines into the fetal or maternal circulations; they never pass from the circulation of the original host. Soluble substances, on the other hand, are found later in the circulation of the other.

Unfortunately, the only fetal waste product which has been extensively experimented on is CO2 and Doderlein in the "Handbuch der Geburtshulfe" for 1915 says, "At present it is impossible to state more than that fetal waste products make their way to the placenta and through it reach the maternal organism which subsequently eliminates them."

So far as the original work of the author of this article goes, he secured specimens of maternal and fetal blood simultaneously just after the infant was born. The fetal blood was obtained from the placental end of the cord, and the maternal from one of the veins of the forearm.

Protein, whose characteristic element is nitrogen, cannot be utilized as such but is broken into simpler

nitrogen compounds, the amino acids, which are absorbed into the blood stream and carried to all parts of the body where different organs rebuild them into different varieties of protein, the kind depending on the organ. These amino acids are used for both construction and repair purposes. All through life tissue protein is being destroyed, resulting in chemical compounds classed as waste products and, like the proteins, are characterized by the presence of nitrogen. The blood protein may be regarded as a reserve material and the broken or decomposed protein, on both the constructive and destructive sides of metabolism, as the non-protein nitrogen of the blood. (Symbolized n.p.n.)

Using the method of Folin, the author found, in a series of 35 cases of normal pregnancy and spontaneous delivery, an average of 25.2 mg. of n.p.n. per 100 CC of maternal blood and 24.9 mg. for the fetus. Not only is there a striking equality between the average for the mothers and that for the fetuses, but even a more striking equality between that of the individual mother and her fetus. In 20 of the cases the difference between the two organisms was not more than 1 mg. and in the balance a difference of only 2 mg. The most instructive observation was that furnished by a case of twins where the n.p.n. of the mother was 30 mg. per 100 CC of blood and that of each fetus was 30.2. The equality of the n.p.n. of the two organisms suggests free passage between them, perhaps a regulatory mechanism or apparatus, operative on both sides of the metabolic function, which can be best explained by that of simple diffusion. Before offering this as a final conclusion, however, all members of the n.p.n. family were studied, the amino acids, urea, ammonia, uric acid and creatinin.

Amino Acids: These are soluble crystalline substances and have been found by several experimenters to pass readily across a permeable partition and by a process of diffusion into body tissues. It is now known that amino acids are the material furnished by the mother out of which fetal protein is constructed. There is no foundation for the old belief that the placenta synthesizes protein for the fetus, the latter performs that function for itself. In determining the amount of this protein derivative in the blood, the method of Van Slyke was used because it takes more of the group into consideration than any other method. Since these acids are contained in both the blood corpuscles and the plasma, only the latter can be taken into consideration as only they are soluble.

Here a uniform excess was found in favor of the fetal plasma amounting to 2 mg. of nitrogen which means that some other factor was operative than that of simple diffusion of the placenta. Van Slyke found that when amino acids were injected into the circulation they were quickly absorbed by the tissues and an equality was not established until the tissues contained about ten times as much as the plasma. This is referred to as the "absorption" phenomenon. "The results indicate that the placenta absorbs these substances and prevents their departure from the fetal circulation."

The nitrogenous waste products of the fetus find their way through the circulation into that of the mother where they are eliminated through renal function which can only be brought about by placental diffusion. Experiments regarding urea concentration, which is the chief protein waste, show that in a series of 16 cases the amount for the maternal blood was 10.5 mg. per 100 CC and 10.4 for the fetus. In cases of nephritis where we have a high urea concentration, we find a corresponding increase in the fetal circulation. What has been said of urea is also true of ammonia for the test includes both waste products. Regarding *uric acid*, an average of 12 cases shows 3.8 mg. for both mother and fetus.

Regarding *creatinin*, Hunter and Compbell found in a series of 18 cases an average of 1.67 mg. per 100 CC of blood for the mother and 1.75 for the fetus while Plass, in a series of 12 cases, found an average of 1.7 for the mother and 1.73 for the fetus.

These rather startling results leave no doubt in the mind of the author that the placenta possesses a passive role in the transmission of nitrogen waste products; they pass as if the placenta did not exist and an estimate of the maternal blood holds good for that of the fetus.

Carbo-hydrates become available as glucose, the blood sugar. The method of Benedict was used. In a series of 24 cases the average for the mother was .13 per cent and for the fetus .115 per cent. Bargsma claims that the sugar content of the two organisms is always the same but his technique is criticized because he did not collect the specimens of blood simultaneously. The large majority of cases showed a slightly higher concentration in favor of the mother. In a case of double ovum twins, each having its placenta, the one had .099 per cent and the other .096 per cent of blood sugar while the mother had .12 per cent. Hofbauer's doctrine calling for the presence of placental enzymes as a necessity for fetal metabolism does not hold true.

Fats and Lipoids: A long series of observations was made and it was found that fats and lipoids were more abundant in maternal blood, and large maternal amounts were associated with large fetal amounts; but the most notable finding was the difference between the quantities in the two organisms and this was a constant finding. The difference is so great that one is forced to the conclusion that these substances do not pass through the placenta with the freedom that the other substances do. This may mean that an enzyme is necessary in their case or that they do not pass at all. Available observations show that the latter explanation is the correct one.

Mendel and Daniels used pregnant rats and injected Sudan III into the maternal blood and invariably it was found that the maternal fat was stained but never the fetal and the line of demarkation in the placenta was very sharp. This discovery and the difference in the maternal and fetal fat per centage demonstrates that fat is not one of the materials contributed by the mother to the fetus. The latter obtains its fats and lipoids from carbo-hydrates.

It is during the latter half of pregnancy that the placenta behaves as a semi-permeable membrane and we cannot, without certain reservations, give it this function during the early months of pregnancy when the chorionic villae are decidedly different.

No doubt water and the inorganic salts are regulated as the food products are. We cannot at present speak in regard to iron. The great amount of it found stored in the body of the fetus suggests a compensation for its scarcity in the maternal milk.

The fact that we have a high fat content in the maternal blood and a low content in the fetal blood and that the former does not pass over to the latter, might account for the storage of fat in the tissues of the mother.

Intrauterine death of the fetus in the presence of renal or cardiac complications on the part of the mother, may be explained as due to the inability of the latter to properly eliminate waste products.

There is no diet specifically adapted to the pregnant state; personal experience and the dictates of appetite may be as safely followed during pregnancy as before. Quantity rather than quality should be the guide and a diet that was sufficient before pregnancy will be found to be ample during pregnancy. Overeating rather than insufficient eating provokes discomfort. Any diet intended to control the growth of the fetus, carried out so rigidly as to weaken the mother, is detrimental.

ALBERT C. SCHULZE, M. D.

SOME STATISTICS ON MYOPIA IN SCHOOL CHILDREN: Ernest Thomson (Brit. Jour. of Ophth., Vol. 3, No. 7, July, '19.) during the period from August 1914 to July 1919, personally examined 3,349 school children from the county of Lanark, England, comprising a community engaged in agriculture, coal mining and industry. Such a population can rightfully be subdivided into urban, rural and mixed, respectively.

(1) Contrary to the usual orthodox teaching the author's statistics, incomplete as they are, refute the contention that myopia is more common in urban than rural sections. He found that of 2,655 urban cases 468 or 17.6 per cent were myopic. In the opinion of the reviewer the conclusion to be drawn therefrom may be altogether misleading if all factors are not carefully considered.

To elaborate further the author found in the urban group of 1,561 cases, 269 myopias or 17.23 per cent; in the agricultural group of 229 cases, 47 myopias or 29.52 per cent; and in the mixed group of 365 cases, 97 myopias or 26.57 per cent.

(2) The next point that the author considered is the mean myopia in the different districts. The procedure adopted was to add together the highest meridians of myopia in all the myopic children examined in each district and to divide the sum by the number of myopic children examined, thus obtaining the mean highest meridian.

The results thus obtained are as follows: in the urban district, number of children examined 1,561, mean of highest meridian in right eye 3.84, in left eye 3.34; in the agricultural district, number of children examined 229, mean of highest meridian in right eye 4.21, in left eye 3.15; in the mixed district, number of children examined 365, mean of highest meridian, in right eye 4.12, in left eye 4.10. It will be observed that the right eye has the higher mean meridian of myopia.

(3) It is generally asserted that divergent strabismus is the most common type of squint in myopia. This is quite contrary to the findings of the author for in his examination of 790 myopes, 65 showing strabismus and 9 probably squinting, 29 were divergent and 45 convergent.

PAUL D. BERRISFORD.

THE TREATMENT OF UTERINE CANCER BY RADIUM: Henry H. Janeway. (Surg. Gyn. and Obs. Vol. No.—) Statistics from the leading Surgical Clinics of the world indicate that the operative treatment for carcinoma of the cervix is far from satisfactory. Immediate mortality ranges from 10 to 20 per cent, and even in Wertheims first one hundred cases it was 30 per cent. The Surgical Procedure requires an expert and even in the hands of the expert postoperative sequelae occur, such as suppuration in the abdominal wound, cystitis peritonitis, phlebitis, ureteral and vesical fistulae, etc. In addition to these disagreeable sequelae, there is always the possibility of a recurrence of the carcinoma. The author quotes Clark who says, "It is possible that when we make a final summary of our combined experience, we may have to accept the conclusion that a less radical operation, even though it save fewer cases, may be preferable when attended by a low surgical mortality and few or no operative sequelae."

Janeway recommends the use of radium in cases of uterine cancer because it avoids operative risk, disagreeable and dangerous postoperative sequelae and is in itself a very efficient method for the treatment of these cases. In his own work he reports seventeen cases of carcinoma of the cervix; twelve of which were clinically cured from three and one-third years to six months after treatment. Of the recurrent carcinomata of the cervix there were four cases, two of which were clinically cured. Sixteen and twenty-five months after treatments; four cases of carcinoma of the fundus, two of which were clinically cured fourteen and twenty-one months after treatment.

Regarding the question of dosage Janeway advises against the use of excessive doses of radium such as are used by Bumm who recommends a total dosage of eighty-seven hundred milligram hours to fifteen thousand milligram hours. A review of prominent radium users is given which shows that no two men are using the same dosage or the same method of treatment. Janeway's method consists of the use of three tubes inserted in the utero-cervical canal, arranged end to end in a long rubber tube. In the presence of a cervix ulcer additional tubes are dis-

tributed evenly over its surface and held in place by means of a mold made of dental modeling compound. This mold in addition to holding the radium in place as a protection for the bladder and rectum and if desired a piece of lead may be embedded behind it for filtration. The author recommends the use of from twenty to thirty or forty millicuries of emanation according to the size of the tumor treated. Bagg has shown that one millicurie will produce a general necrotic effect through a sphere of tissue surrounding the tube for a distance of one centimeter. The dose from twenty to forty millicuries of emanation is 2,640 to 5,280 millicurie-hours.

The article is concluded by the author as follows: "From the therapeutic standpoint, cancer of the uterus must be regarded as a local disease, and the most practical method of handling the disease at its site of origin must be adopted.

"Our present evidence indicates that radium destroys the disease at this site to a greater distance than the knife is capable of removing it, and does this with no risk of inconvenience to the patient and only a small tax on the skill of the surgeon. Every effort should, therefore, be made to secure its general use throughout the country."

G. A. GEIST.

THE EFFICIENCY OF SURGICAL TREATMENT IN THE BLEEDING TYPE OF GASTRIC AND DUODENAL ULCER*—D. C. Balfour, calls attention to the fact that various complications may develop in direct connection with gastric and duodenal ulcer, such as acute and chronic perforation, obstruction, deformity, malignant degeneration, and hemorrhage, and present added problems to the surgeon; one of the most important of these is hemorrhage.

Gastric hemorrhage has been the occasion of more confusion in diagnosis, uncertainty in therapeutic indications, and irrationality in treatment both medical and surgical than perhaps any other gastric condition. This paper is concerned chiefly with two groups of cases, first, those in which operation has proved unsatisfactory because of error in attributing the bleeding to a lesion which is not present, and second, those in which the surgical procedure carried out has failed to obviate further hemorrhages even though a correct diagnosis has been made.

The first group of cases, namely, those in which no intrinsic lesion is present is very important, and requires careful study as to the cause of the hemorrhage; the hematemesis may be due to such extrinsic causes as the pancreas, appendix, gall-bladder, spleen, or liver.

In the second group of cases, the records of the Mayo Clinic show that 25 per cent of gastric ulcers and 20 per cent of duodenal ulcers have been complicated by one or more gross hemorrhages. In the earlier days of gastric surgery the operation of gastro-enterostomy proved to be so efficient in a large majority of benign lesions of the stomach and duodenum associated with hemorrhage, that the realization came rather slowly that at least some of the failures to obtain a complete cure including protection against further hemorrhage could be attributed to the fact that direct attack on the ulcer was not added to the indirect therapeutic measure of gastro-enterostomy. The recognition of the danger of malignant degeneration in gastric ulcer gave the first impetus to the practice of combining gastro-enterostomy with the radical excision or destruction of such ulcers. The advisability of such a principle is now well established. This has been shown in a series of 2875 ulcers of the duodenum operated on between January 1, 1906 and January 1, 1918; 20 per cent of the patients had gross hemorrhages before operation; 63 of these reported hemorrhages at some period following operation. Twenty patients who had not had hemorrhage before operation reported hemorrhages after operation.

The incidence of hemorrhage in duodenal ulcer following operation is definitely higher than the incidence in gastric ulcer, notwithstanding the fact that there is a greater tendency for gastric ulcer than for duodenal ulcer to be complicated by bleeding. A study of the types of operation done in these cases gives a clue to the reason why operation failed to protect a patient against further hemorrhages. In not one of the 83 cases in which hemorrhages occurred after operation for duodenal ulcer was the combined operation of excision of the ulcer with gastro-enterostomy carried out, and with the exception of 8 cases in which various types of pyloroplasties were done, a gastro-enterostomy alone was done in every case. This fact is significant, particularly when one compares the results of the established methods of excision and gastro-enterostomy in gastric ulcer in which, although the tendency to hemorrhage was a greater, a much smaller percentage of bleeding followed operation. The combined procedure of excision and gastro-enterostomy was carried out in only one of the 17 cases of gastric ulcers which bled after operation. These facts can only mean that the methods of direct attack combined with gastro-enterostomy which are used in the present treatment of gastric ulcer are a source of protection to the patient against further hemorrhage.

From a study of our own cases, it was perfectly evident that in both duodenal and gastric ulcers, gastro-enterostomy alone is insufficient to protect the patient against further hemorrhages, and that excision combined with gastro-enterostomy has given almost total protection.

Cautery is advocated as a very efficient means of carrying out excision in this group of cases, and inasmuch as some ulcers have bled after operation which had not bled before operation, it is reasonable to adopt the practice of destroying all ulcers that are reasonably accessible. This destruction can be accomplished in a very safe and efficient manner by means of the cautery.

UTERINE DYSPEPSIA—T. Gillman Moorhead, (The London Practitioner) recalls the long well known ideas that disturbances of the pelvic organs are fruitful sources of gastric trouble.

He mentions Moynihan's classical papers on appendicular dyspepsia, but states that nowhere has he been able to find any mention of uterine disease producing a clinical picture resembling gastric ulcer and so he quotes the histories of two cases of his own.

Case 1. Married woman, age 36, severe pain in stomach made worse by food and relieved by vomiting. Well up to a few months before. Menses regular and painless. Little constipation. Apart from stomach no complaints and nothing at first found in physical examination except a localized area of epigastric tenderness just above umbilicus. Vomit was thrice blood-stained. Treatment, even with rest in bed, no relief and vomiting and tenderness persisted. Morphia and bromides gave no relief. Another complete examination revealed nothing until a rectal examination showed a fibroid growing from the uterine wall and pressing on the bowel. At operation a tumor size of an orange removed. From the day of the operation no more vomiting, pain ceased, patient began to eat well, and became completely cured.

Case II. Unmarried woman, age 40, complains of gastric pain following food, and occasional vomiting. Seen off and on for nearly a year—no relief. Demanded operation because pain now severe and vomiting frequent. Menstrual history showed rather prolonged heavy periods but no tumor felt. Finally made **belated** rectal examination and felt a retro-uterine tumor compressing the bowel. At operation the fibroid was removed, and other organs carefully examined and nothing found amiss. Two years after operation patient reported that she had been perfectly well ever since.

In conclusion the author says that while these cases may not be exceptional, at any rate they reveal the importance of making rectal examinations in cases of supposed gastric ulcer that are not improving under treatment.

Probably it is only fibroids which remain impacted in the pelvis and which press upon the rectum that cause such symptoms, for we are all acquainted with the cases of huge fibroids existing along with good health and perfect condition.

Two things stand out in this article—First, the evils of not making a rectal examination sooner.

Second, the reflex quality of the symptoms which the author attributes to the uterus and which in reality are due merely to pressure on the bowel and sacral plexus.

CHAS. N. HENSEL.

PATHOLOGY AND CLINICAL FORMS OF CEREBRAL ABSCESS OF OTOGENOUS ORIGIN. Chas. G. Cumston, (New York Med. Jour. May 10, 1919) reviews the pathological and clinical forms of cerebral abscess as taught by the French school, namely bone, meninges and brain. The first were found in all cases where the petrous portion becomes involved. The meningeal lesions are pictured by a generalized suppurating leptomeningitis or a focus of pachymeningitis limited to the primary site of the osteitis, and may be encysted or diffuse, situated on either dura or arachnoid. But most important is the cerebral abscess most commonly found single as a circumscribed encysted pus focus. When multiple they may be regarded as of pyaemic origin and operative interference is useless. From various statistics given by different observers the brain is most frequently involved and the spheno-temporal lobe the most common site. As no importance has been attributed to this cerebral area, large abscesses may form in this region without giving functional disturbances. The abscess is usually encysted or walled off by a limiting membrane. A section through the site of the lesion shows, macroscopically, a normal whitish zone gradually becoming grayish with here and there small brown patches of dilated blood vessels as the limiting membrane is approached. The limiting membrane is dark red in color and 5 to 6 millimeters in thickness. Histologically there are three zones; a zone of necrosis, a zone of encystment or limiting membrane and finally a zone showing irritation of the perpheral structures, the nerve cells undergoing chromatolysis, the vessels being greatly dilated and gorged with leucocytes, lymphocytes and plasma cells. The pus of these abscesses is more ape to be thick, greenish in color and of an offensive odor. In order of frequency the bacteria found are streptococcus, staphylococcus and diplococcus. Acute abscesses are distinguished from chronic in that they are usually monomicrobic. In chronic forms mixed infection predominates. This confirms Lenterts theory that as the vitality of the bacteria decrease they are superseded by saprophytes. The diplococcus favors capsule formation while anaerobic types develop a diffuse abscess with necrotic walls. This type is an index of great gravity. French otologists maintain that there are two distinct symptomatologies in otogenous cerebral abscess; the first with rapid meningeal symptoms and the second typhoid like. With these are classed the latent form with no phenomena of an infectious process. Another clinical form assumes the picture of a brain tumor, slow pulse, headache, vertigo, vomiting and apyrexia.

Very minutely classified and each type separated, such are the teachings of the French school.

GEORGE C. DITTMAN.

A CONTRIBUTION TO THE HISTOPATHOLOGY OF EPIDEMIC ("LETHARGIC") ENCEPHALTIS. By Peter Bassoe and George B. Hassin. (Jour. of Arch. of Neur. and Psych., Vol. 2, No. 1)

The authors call attention to the various types of Encephalitis associated at times with stupor, somnolence and cranial nerve palsies such as the hemorrhagic superior polioencephalitis of Wernicke,

the cerebral form of poliomyelitis, the sleeping sickness caused by trypanosomiasis, syphilitic meningitis, paretic dementia, encephalitis caused by anthrax (Fulci) or other infectious diseases, as tuberculosis, cerebrospinal meningitis and especially influenza.

They give a brief clinical report of an infant of four weeks, whose illness began with vomiting and stupor, nystagmus and strabismus. Temperature varied between 98 and 103.2F. A detailed report of the necropsy findings in 3 such cases is given. Macroscopically, the brain appeared normal except that the pia was somewhat opaque and congested especially around the cerebellum. Microscopically, the pia was infiltrated with lymphocytes and plasma cells especially around the vessels. The vessels were congested and hyperemic and many red cells were also found in the surrounding tissues. This infiltration extended all over the pia but especially around the cerebellum and frequently involved the adjacent parenchyma. This mild leptomeningitis not so pronounced as in poliomyelitis or in paralyticdementia, very much resembles that described by Mott and others in Trypanosomiasis.

The central cortex shows few pathologic changes although various acute cell degenerations may be observed from the mild chromatolysis to the severe type where the cell body and nucleus is reduced to an amorphous granular mass. The pathologic findings in the basal ganglia the subthalmic area—the tegmentum are more pronounced. The vascular infiltration is marked and the cellular elements are very abundant. Many of the smaller vessels are congested, pack with blood pigment, and some contain thrombi. Very few capillary hemorrhages are found; degenerated ganglion cells are seen occasionally. No degenerative process was observed in the subcortical fibers. The pons, medulla and at times the spinal cord show the same intensity of interstitial changes as the large ganglia and the mid-brain. The spinal canal is often occluded, either by proliferated ependyma or by an amorphous mass mixed with leucocytes.

The authors believe that this type of encephalitis differs from the influential type, because in the latter the only lesions found are hemorrhages. The process more closely resembles the histopathological picture found in African sleeping sickness differing somewhat because of the chronic course of the latter.

E. M. HAMMES.

THE TECHNIQUE OF GALL-BLADDER AND COMMON-DUCT SURGERY. Richter (Surg. Gyn. and Ob. Vol. 29, No. 5) states that the technique of gall-tract surgery is in process of becoming standardized. He emphasizes a few phases of the technique.

1. Enucleation of the gall-bladder.

He brings out that the cystic duct is not easily reached without the preliminary emptying of the gall-bladder. This is particularly true where the preliminary rotation of the liver is not readily accomplished. The tense gall-bladder pushes the cystic duct backward and upward, away from the operator and the apex is the only mobile part and must therefore be the most disturbed part. He splits the peritoneum as it is reflected from the liver to the gall-bladder, just enough to admit a finger. The finger is inserted and the gall-bladder peeled from its bed. The release of the tense gall-bladder will cause the fundus to push its way out of the incision, into ones hand and bring its apex measurably within control.

2. The cystic duct.

The author points out that the cystic duct should rarely be clamped with its vessels, tissues and peritoneum in two. It is quite unnecessary to ligate it close to the common duct. One must avoid the careless ligature of the apex of the gall-bladder itself, lest a continued infection of the stub of the gall-bladder remain. It is an odd fact that many writers insist upon severing the cystic duct close to its termination in the common duct. The very absence of any number of reports on recurrence of trouble in the stump of the cystic duct other than that due to stones left behind, should suggest that it is rarely the source of trouble.

3. The flap of peritoneum.

These flaps are merely pressed against the denuded surface of the liver. Suturing tends to lift the flaps out of the depressed bed leaving a space behind.

4. The raw surface.

The position of the raw surface is such that massive adhesions to it are naturally objectionable, but the surface itself is depressed and not exposed to contact with adjacent structures. E. Wyllys Andrews placed the omentum between the liver and duodenum. Oozing from liver surface is treated by haemostatic preparations, such as "coagulose."

The stump of the cystic duct is ligated with small cat gut and is left intra peritoneal, the abdomen is closed without drainage.

The author has carried out the idea of closure of the abdomen without drainage in all gall-bladder removals or common duct operations, except where unusual oozing from the liver surface made a gauze pack seem necessary, or where the apparent virulence of an acute infection made him fear a fulminant peritonitis. The number of cases has not been large, but there has been no death in the series. The post-operative recovery has usually been smooth, "like an uncomplicated appendix case," to use the expression of one of the house surgeons. A few cases have shown a reaction suggestive of what is commonly seen in patients in whom a gauze pack has been used. It has seemed to me that the leakage of infected bile from the denuded liver surface might possibly be a factor in the production of this reaction. It has not been necessary to reopen the abdomen in any case. No patient has developed an unusual temperature. The abdominal incision in all cases has remained clean.

E. M. JONES.

BOOK REVIEWS

CEREBROSPINAL FLUID IN HEALTH AND IN DISEASE. By Abraham Levinson, B. S., M. D. C. V. Mosby Co. St. Louis, 1919. $3.00.

The study of the cerebrospinal fluid and the diagnostic and therapeutic facts and speculations accruing there occupy a most important position in medical progress. Dr. Abraham Levinson has written a compact and comprehensive work incorporating into it the results of extensive studies from his own endeavors as well as facts gleaned from all reliable sources which came to his notice.

As no comprehensive work on all phases of the cerebrospinal fluid has yet appeared the author is to be commended for placing before the medical profession a timely work of this nature.

P. D. BERRISFORD.

THE FUTURE OF MEDICINE. By Sir James Mackenzie, F. R. S., M. D., F. R. C. P. L. L. D., F. R. C. P. L., Oxford Medical Publications, $5.00

If the author of this book means to ask the question, "What will the future of medicine be," he fails to answer the question directly If he means to prophesy what the future of medicine will be, the reader perhaps remains unconvinced: but if he plans to call our attention to the changes that must take place in the teaching and the practice of medicine, in its broadest sense, and as they are being conducted at the present time, in order to enable physicians to render the greatest amount of good to suffering humanity, then he succeeds in a striking and convincing manner.

The book is divided into three parts. In the first part, which is entirely critical in its nature, he critisizes outspokenly our present methods. We should pay more attention to the slight complaints and apparently insignificant symptoms as these manifest themselves only in the early stages of any disease, and when cure is most likely. While he recognizes the need of specialists and laboratory workers, he calls attention to the fact that they often do not see the patient or are not called in consultation until late in the course of the disease and then view the patient only from the narrow outlook of their own chosen field. He does not criticise autopsies but does criticise the limited way in which autopsy findings have used to interpret and explain the early signs of the disease and how utterly we have failed in the application of what they teach us to the field of preventive medicine.

In the second part of the book, the author lays bare his own personal experiences in the earlier years of his professtional work. Having accepted the teachings of his instructors in a more or less matter of fact, manner, he was greatly disappointed in afters years to find that much of what he had learned was without foundation and some of it entirely wrong. He was obliged to work things out for himself, and through his perserverance and ingenuity and his ability to analyze, he succeeded in finding out what caused different signs and symptoms and what they meant from the standpoint of diagnosis and prognosis. To attain the latter he was often obliged to make most careful observations over a long period of time, but only such observations after all as any one could make, unaided even by the present day highly specialized tests, etc.

The third and major portion of the book is constructive in nature. Here the author attempts to offer some suggestions, based on his own rich personal experience, as to how improvement can be made in the teaching and practice of medicine. We should pay more attention to the development of our senses of touch, hearing, sight, etc., and pay more attention to the analysis of what we find. In order that physicians can the better serve suffering humanity they must attach more importance to preventive medicine and to the early diagnosis of disease. We do not need more nor better specialists but we do need general practitioners who are more thoroughly grounded in the basic and fundamental teachings.

In one of the later chapters of the book, he writes, "If we look over the whole field of medicine and contemplate the different workers to recognize which worker has the opportunity for finding out the facts, essential to an intelligent prosecution of research, we can find only one type of worker who fufills the requirements, and this is the general practitioner."

The book is interesting as it deals with a unique subject; it is not without authority as its author is a man of international reputation; and it is convincing because he presents glaring instances and indisputable evidence.

A. G. SCHULZE.

THE DON QUIXOTE OF PSYCHIATRY. By Victor Robinson, Historico-Medical Press. N. Y. $2.00. 1919.

Victor Robinson writes in a very interesting manner the biography of Dr. Shobal Vail Clevenger whom he terms "The Don Quixote of Psychiatry." And true it is that Clevenger had a variegated and at times tumultuous career engaged as he was at various periods in the pursuit of pharmacy, inventing, civil engineering, psychitary, politics pedagogy, etc.

Most gruesome is that portion relating to the political abuses and crimes committed at the Dunning Institution for the insane under "King" Michael McDonald Chicago's political boss. It was during that period that Dr. Clevenger served as pathologist in the same hospital. Astounded at the debauchery and open manifestations of graft displayed by Warden Harry Varnell and his co-workers he soon realized that only a thorough upheavel of Chicago's political life could remedy the condition. Assuming the role of reformer, practically single-handed and at the peril of his life he undertook the Herculean task of cleaning the political stables. At this mussy and

thankless job he was fairly successful and for this he was rewarded. John P. Altgelt governor of the State of Illinois needed such a man as he to superintend the Kankakee asylum where things were not going well. Despite the advice of his friends and the fear of his past experience he readily accepted, there to find a prevailing and irremediable condition that weighed upon his soul. When he offered a protest and at length became a disturbing factor in the political cosmos he was given a vacation.

Noted scientific friends he had in numbers with whom he kept in correspondence. The author has seized the opportunity to sketch a short biography of these men of science as they are introduced into the work, Joseph Leidy, C. B. Cope, Joseph La Conte, William Pepper, William Hammond, E. C. Spitzka etc., in fact not a small portion of the book is devoted to it.

The subject matter holds the reader to the end written as it is by an author with an excellent command of the English language, a subtile humor and a keen incite into human frailties.

The following are a few of the biting epigrams which the author so delights in:

"Nature is a harsh step-mother to the human race; if a man is syphilitic or has gallstones, his children are in danger of inheriting the disorder, but if he has a special talent, his offspring is not so liable to be infected with it."

"Nature often puts talents into the wrong hands."

"If patients were willing, he would kneel at their bedside and pray for them, and from Sunday-school pulpits he would relate how he and God cured the sick—tho it was common knowledge among his confreres that he would desert critical cases at critical times."

"Spiritus frumenti and spiritus vini galli have been denied a place in the latest edition of our Pharmacopeia: we wish there were also a way of expelling narrow-mindedness from science."

"An author who does not practice birth-control with his literary progeny, dooms most of them to early extinction."

"The arch-southern, proprietor of negroes and father of mulattoes,—a gentleman of such exquisite sensibilities that he was quite capable of selling his own children into slavery—needed a national disaster to convince him that he was out of place in the nineteenth century."

PAUL D. BERRISFORD.

VENEREAL DISEASES. By C. H. Browning M. D., D. P. H., and David Watson. M. B., C. M. Henry Frowde and Hodder & Stoughton, London. 1919. $6.50.

One often is inclined to approve or disapprove of a book, especially a text book, merely because one agrees or disagrees with the author. Thus I found myself unconsciously endorsing this book because the author gives it as his experience that vaccine treatment in Genito-Urinary practice is of very limited use. This happens to coincide with my experience. However agreeing with the author or not one must say that this text book is a very creditable work.

The usual comparison of chancre and chancroid has been omitted and the subject of chancroid treated only in a small chapter which is about all that this subject deserves these modern days. Instead the book goes into the diagnoses of the primary lesion of syphilis from the laboratory side very adequately. The detailed instruction of the various methods of identifying the spirochoeta pallidda by various methods including the dark field is very satisfactory. This is what the student requires.

The book is well worth careful reading.

E. C. GAGER.

HYGIENE AND SANITATION FOR NURSES. By George M. Price, M. D., Lea & Febiger. Philadelphia & New York. 1919. $1.75.

In the preface of the first edition of this book Dr. Price expressed the hope that "Hygiene and Sanitation for Nurses" might be of service to the nurse in her many and various duties which are no longer confined to the sick room, but extend to practically every phase of public health. The adoption of this book as a text book by many of the leading training schools for nurses and the demand for a third edition within the first four years of publication, proves that this hope has been fully realized.

The purpose of the book is to give the nurse a fundamental knowledge of the principles of hygiene in its various branches. This, the author is well fitted to do, not only thru his medical knowledge, but through his long association with the actual problems of municipal public health.

A consideration of the titles of its chapters: Introduction to the Study of Hygiene, the Hygiene of Habitations, the Hygiene of Foods and Food Supply, the Hygiene of Schools and of School Children, the Hygiene of Occupation, Personal Hygiene and an added chapter in the third edition on Infectious Diseases and their prevention, reveals the broad scope of this work. The subject matter is well presented and points of dispute and too detailed instructions on minor matters have been omitted. Undoubtedly this volume would be a valuable hand-book to any one interested in public health work.

WARRE